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INDEX TO VOLUME XXIII.

| | PAGE | | PAGE |
|--|------------------------------|---|---------------------------------------|
| Abe Lizzard..... | 88, 150, 666 | Aristo Paper, Mat Surface on..... | 451 |
| Abney, Captain W. de W..... | 336, 559, 755 | “ “ Spots on..... | 254 |
| Accelerator for Hydroquinone..... | 228 | “ “ Retouching Difficulty with..... | 415 |
| Accident with Collodion..... | 580 | “ Prints, Toning..... | 351 |
| Acetate Bath for Toning Aristo Paper... 196 | | Aristotype Paper, Gallic Acid Developer for..... | 100 |
| “ “ “ Gelatino - Chlo-ride Papers. 67, 68 | | “ “ Progress in Printing with..... | 103 |
| Actinometer, Ballard..... | 95, 158, 159 | “ “ Toned with Platinum..... | 395 |
| Adapter for Shutter..... | 373 | “ Papers, Use of..... | 650 |
| Air, Liquid..... | 420 | Aristotypes..... | 19 |
| Alaska, Photographs of, by S. R. Stoddard..... | 550 | Armstrong, T. N..... | 27, 50 |
| Albumen Medium for Coloring Photographs..... | 483 | Art, Application of, to Photography..... | 78, 168, 368, 429, 457 |
| “ Paper, Black Tones on..... | 288 | Asphalt and Sulphur, Experiments on... 389 | |
| “ “ Printing and Toning.. 639 | | Astronomical Photography..... | 260 |
| “ “ Sensitizing Formula for..... | 261 | “ “ Isochromatic Plates, Condemned in..... | 292 |
| “ “ Softening of..... | 127 | “ “ New Camera for..... | 485 |
| Alkali Used in Development..... | 65 | “ “ Orthochromatic Plates in..... | 295 |
| Alum Hypo-Bath, Toning Action on Chloride Plates..... | 399 | “ “ Note on..... | 675 |
| Aluminium Camera..... | 677 | “ “ Work, Criticism of..... | 421 |
| “ Chloride in the Toning Bath..... | 324 | Astronomy, New Discovery in, by Means of Photography..... | 325 |
| “ “ with Amidol..... | 548 | Auckland, New Zealand, Photographic Club..... | 412 |
| “ Dishes Suggested..... | 196 | Autocopyist, Probable Formula of..... | 255 |
| “ Flash Light..... | 57, 261 | Automatic Shutter for Time Work of Photo-Engravers..... | 100 |
| “ for the Flash Light, How to Work..... | 556 | Bain, Robert E. M..... | 210 |
| “ Hardened..... | 556 | Baker, G. R..... | 694 |
| “ Lenses mounted in..... | 421 | Ballard Actinometer..... | 95, 158, 159 |
| “ Photography with..... | 646 | Barnes, Miss Catharine Weed..... | 242, 616, 472 |
| Amateur Apparatus, Transportation of.. 69 | | Bath, A Useful..... | 654 |
| “ Darkroom, Fitting up..... | 513 | Bear, Accidental Photograph of..... | 516 |
| “ Photography at the World's Fair..... | 209 | Bedding, Thomas..... | 527 |
| “ “ in America..... | 472 | Bellows, Fixing Camera..... | 671 |
| American Institute Fair, Exhibition of Photographs at..... | 673 | “ for Camera, Making..... | 178 |
| “ “ List of Premiums..... | 760 | Beyersdorff, Adolf..... | 270, 305, 332, 365 |
| “ “ Photographic Section, 60, 94, 155, 184, 217, 250, 317, 379, 573, 637, 701, 764 | | Bibliography..... | 61, 125, 220, 253, 382, 414, 510, 605 |
| “ League of Amateur Photographers..... | 451 | “ of the Chemistry of Light, Smithsonian Publication..... | 36 |
| Amidol and Aluminium Chloride for Bromide Paper..... | 548 | Bichromated Paste for Lantern Slides... 358 | |
| “ Developer..... | 454, 508, 562, 579, 613, 700 | Binding Mats for Lantern Slides, N. Y. Camera Club..... | 261 |
| Ammonia, Fuming Box Too Hot for.... 183 | | Black for Inside of Lens Mounts..... | 606 |
| A Negative Experience..... | 746 | “ Tones on Albumen Paper, Formula for..... | 288, 351 |
| Architecture, Record of Old Style..... | 325 | “ “ “ Salted Paper..... | 6 |
| Argentico Dry Plates..... | 222 | Blisters or No Blisters..... | 245 |
| Argentotype Paper..... | 518 | Blue Prints, Increasing Brilliancy of... 549 | |
| Aristo Paper..... | 364 | | |
| “ “ Hot-Water Treatment of..... | 121 | | |
| “ “ Manufacture of..... | 325 | | |

| | PAGE | | PAGE |
|--|------------------------|---|--------------|
| Blue Glass in the Diaphragm, Use of... | 267 | Color-Sensitive Films..... | 518 |
| Book Illustrations, Copying..... | 27, 50 | “ “ Plates, Action of Diffused | |
| “ “ Phototype-Engraving | | “ “ “ Light on..... | 581 |
| for..... | 103 | “ “ “ a n d Afternoon | |
| Boyd, Mary Scott..... | 335 | Light..... | 262 |
| Bridge, F. A..... | 279 | Colored Positives on Paper..... | 87 |
| Bromide Enlarging..... | 444, 464 | Coloring Gelatino-Chloride Prints..... | 549 |
| “ Paper, Anidol and Aluminium | | “ Lantern Slides, Notes on..... | 732 |
| Chloride for..... | 548 | “ Photographs, Albumen Medium | |
| “ “ Developer for..... | 607 | for..... | 483 |
| Bromides, Toning Green..... | 95 | Colors, Direct Photography of..... | 229 |
| Brooklyn Institute Photo Depart. Exhibi- | | “ from Coal Tar..... | 703 |
| tion..... | 311 | “ Photography in..... | 374 |
| “ Y. M. C. A. Camera Section.. | 90 | “ “ “ Natural..... | 38 |
| Bruce Telescope, Lenses for..... | 37 | “ “ “ by Collotype Pro- | |
| Burton, W. K..... | 276, 532, 620 | cess..... | 390 |
| California Camera Club..... | 214, 252, 413 | “ Problem of Direct Reproduction | |
| Camera Club Conference, President's | | of..... | 103 |
| Address..... | 336 | “ Question of..... | 166 |
| “ New Model for Instantaneous | | “ Sorting without Screen..... | 166 |
| Work..... | 103 | Columbian Toning and Fixing Solution..... | 283 |
| “ Stand, The Giant..... | 372 | Columbus Camera Club..... | 61, 670, 702 |
| Canada, Photographers' Association of..... | 603 | Colton, Professor A. L..... | 137, 175 |
| Carbon Process, A Word in Favor of... 620 | | Composite Photography..... | 116 |
| “ Printing..... | 727 | “ “ A New Method of | 73 |
| Celluloid Films, Washing..... | 485 | Compressed Gases in Cylinders..... | 266 |
| “ for Lens Mounts..... | 197 | Concentration..... | 488 |
| Ceramic Gelatine Paper..... | 19 | Congress of Photographers, General | |
| Ceramics, Photo..... | 388 | Committee..... | 68 |
| Chadwick, W. L..... | 143, 180, 695 | Convention, English, at Edinburgh..... | 331 |
| Chemigraphic Etching..... | 338 | Copper Bromide, Intensification with... 130 | |
| Chicago Exhibition..... | 38, 133, 197, 323, 734 | “ Silver, Intensifier..... | 640 |
| “ Lantern-Slide Club..... | 215 | Copying Engravings..... | 172 |
| Chinamen, Photographs of..... | 484 | “ Faded Silver Prints..... | 5 |
| Chloride of Silver Gelatine Paper, Man- | | “ Old Portraits..... | 585 |
| ipulation of..... | 657 | Coroner's Physician, Use of Photography | |
| “ “ “ Paper, Developing..... | 262 | by..... | 710 |
| “ “ Sodium, Effect of, In the Sil- | | Court, Photography in..... | 133 |
| ver Bath..... | 351 | Criticism, A Few Thoughts on the Na- | |
| Chromo-Collotype..... | 709 | ture and Use of..... | 74 |
| “ Photography..... | 378 | Crocodile, Photograph of..... | 580 |
| “ Photographic Slides, Projection | | Curved Surfaces, Printing on..... | 288 |
| of..... | 677 | Curves of Lenses, Measuring..... | 643 |
| Churchill, J. P..... | 636 | Cyanotypes..... | 342 |
| Citric Acid, Precipitating Hypo Bath... 671 | | Dabbs, Mr. B. L. H., Accident to..... | 223 |
| “ “ A Solvent for Para-amido- | | Daguerre, Daguerreotype Portrait of... 229 | |
| phenol..... | 707 | “ Relic of..... | 37 |
| Clearing Solution for Yellow Negatives.. 579 | | Daguerreotype, Renovating..... | 324 |
| Clip for Holding Films Vertical..... | 677 | Dallmeyer's Lenses, Fraudulent Imita- | |
| Clouds, Electric Lantern for Advertising | | tion of..... | 709 |
| on..... | 716 | Dallmeyer's New Lens..... | 97 |
| “ True and False..... | 446 | “ Tele-photographic Lens, 331, 449, | |
| Coal Tar, Colors from..... | 703 | 742 | |
| “ Mines, Flash-Light Photographs of. 357 | | Dana's New Brooklyn Studio..... | 240 |
| Colloid Chloride Emulsion, Formula for 164 | | Darkroom, Fitting Up Amateur..... | 513, 640 |
| “ “ Prints, Toning and | | Dawson, A..... | 568, 593 |
| Fixing..... | 5 | Debenham, W. E..... | 400 |
| Collodion as a Substitute for Albumen, | | Developer and Sensitiveness of Plates, | |
| 55, 85, 109, 147, 274 | | Relative Behavior..... | 397 |
| “ Negatives, Intensification of... 130 | | Developer, Quantity Used for Different | |
| Colorado Camera Club..... | 150, 218, 413 | Plates..... | 95 |
| Color and Light, Morning and Evening. 133 | | Developing Solar Prints..... | 95 |
| “ Effect in the Picture and Photo- | | Development of Weakly Printed Positives | |
| graphy..... | 680, 719 | on Glass and Opal..... | 758 |
| “ Effects on Silk, New Method for... 483 | | Diaphragms, Blacking..... | 383 |
| “ “ in Photographs with Mir- | | Diapositives, On..... | 653 |
| rors..... | 580 | Disruption of Silver Haloid Molecule by | |
| “ of Slides in General, Remarks on... 47 | | Mechanical Force..... | 524 |
| “ Photographs, Lippmann's Recent | | Dissolving Views, Small Lantern and... 695 | |
| Experiments on..... | 710 | Distance Photography..... | 460 |
| “ Screen in Landscape Photography 636 | | Distortion of the Photographic Image... 201 | |

| | PAGE | | PAGE |
|--|---------------|---|---------------|
| Double Exposures, How Made..... | 127 | Faded Silver Prints, Copying..... | 5 |
| " Pictures, How to Make..... | 703 | Fading of Positive Photographs..... | 10 |
| Douglas, A. E..... | 654 | Farmer Howard..... | 500 |
| Dry Plates, Deterioration of..... | 395 | Ferric Oxalate, preparing..... | 320 |
| " " Increased Sensitiveness of | | Farmer's Solution..... | 768 |
| English..... | 716 | Ferrottype Bath Converted to Printing | |
| " " New Method of Packing..... | 716 | Bath..... | 575 |
| " " With Several Coatings..... | 395 | Ferrottype Dry Plates..... | 222 |
| Duchochois, P. C., 10, 46, 140, 172, 203, | | " " Automatic Machine | |
| 236, 653, 678, 722 | | for using..... | 356 |
| Dunmore, E..... | 8, 540, 732 | " Plates and Automatic Appara- | |
| Dyed Lantern Slides..... | 114 | tus..... | 742 |
| Dyes for Gelatino-Chloride Prints..... | 549 | Figaro, Photographic..... | 358, 486, 711 |
| Edinburgh Convention, President's Ad- | | Films, Clips for holding Vertical..... | 677 |
| dress..... | 466, 494 | " Color Sensitive..... | 518 |
| Edinburgh, English Convention at..... | 331 | " Enlarging from..... | 319 |
| Eikonogen and Hydroquinone Developer | | " Self-Flattened..... | 19, 103 |
| Developer in the Hands of the | | Fixing and Toning Baths, Action of... | 581 |
| Professional..... | 434 | " Bath, Temporary..... | 292 |
| Developer Formula..... | 200, 575 | " Do Negatives Lose Density Dur- | |
| Elections, Hand Camera Pictures at..... | 676 | ing..... | 553 |
| Electric Changer for Lantern Slides..... | 101 | " and Washing..... | 730 |
| " Light for Lantern Slides..... | 31 | Flange, Adjustable, for Lenses..... | 284 |
| " " in Photography..... | 7 | Flash Light, Aluminium for..... | 556 |
| " Photo-Cells..... | 633 | " Magnesium..... | 421 |
| " Spark Photography..... | 645, 676 | " Mixture, Accident with..... | 358 |
| Emulsion Formula for Collodio-Chloride. | | " Pictures..... | 227 |
| Making, Simple..... | 33 | " Photography..... | 567 |
| Processes, Orthochromatic Col- | | " Smokeless..... | 295 |
| lodio..... | 206, 247 | Fog, The Value of..... | 753 |
| Emulsions, Effect of Silver Nitrate in... | 324 | Folding Hawkeye Camera..... | 373 |
| Enameled Photographs..... | 479 | Foochow Camera Club..... | 478, 761 |
| Engraving, Photo-Intaglio..... | 643 | Forgeries and Photography..... | 19 |
| Engravings, Copying..... | 172 | France, Letters from, | |
| " Photo collographic Repro- | | 19, 103, 166, 229, 294, 358, 421, 486, 650, 742 | |
| duction of..... | 421 | French Physical Society..... | 295 |
| English Notes...7, 71, 198, 265, 330, 394, | | Fuller, Willard H., (Obituary)..... | 56 |
| Enlarging, Bromide..... | 444, 464 | Gallic Acid Developer for Aristotype | |
| " from Small Negatives..... | 143, 180 | Paper..... | 100 |
| Enlargements, Combination Frame for... | 266 | Gas Bags, Explosion of, at Lantern Show | |
| Escott, James V. (Obituary)..... | 88 | " Cylinders and their Safety..... | 279 |
| Etching, Chemigraphic..... | 338 | Gelatine Films, Removing, from Glass... | 735 |
| Fluid for Glass..... | 191 | " Paper, Manipulation of Chloride | |
| Exhibition, Fifth Annual Joint..... | 122, 289 | of Silver..... | 657 |
| " of English Art at Brussels..... | 295 | " versus Starch as a Mountant.... | 680 |
| " Photographs at the Ameri- | | Gelatino-Chloride Papers, Toning..... | 68 |
| can Institute Fair..... | 673 | " Paper, Toning with | |
| " Photo Depart. of Brooklyn | | Platinum..... | 106 |
| Institute..... | 311 | Gelatino-Chloride Prints, Colo ing..... | 549 |
| " the New York Camera | | Glaisher, Prof., Retirement of, from Pre- | |
| Club..... | 193 | sidency of Photographic Society of | |
| " Photographic Society of | | Great Britain..... | 103 |
| Great Britain..... | 635 | Glass, Action of Water on..... | 319 |
| " The Pall Mall..... | 632 | " Lined Tubes and Pipes..... | 677 |
| Exhibitions, Photographic, in London... | 714 | " Photographs Burnt-in..... | 740 |
| Explosion of Gas Bags at Lantern Show... | 8 | " Positives..... | 298 |
| Exposure Meter, Watkins'..... | 307, 476, 599 | " Removing Gelatine Films from... | 735 |
| " of Plates for Stars, Time of... | 485 | Glycin and Metol..... | 261 |
| " Table..... | 396 | " Developer..... | 675 |
| " Time in Sunlight, Variations | | Gold Class of Metals, Chemistry of..... | |
| of..... | 161 | 140, 203, 236 | |
| " Time, On the..... | 46 | Gold, Recovering from Sulphocyanide | |
| Exposures, Relative, for Varying Propor- | | Bath..... | 292 |
| tions of Original Image..... | 400 | Gorilla Life, Records of..... | 7 |
| Exposures, Some Factors Regulating.... | 420 | Gotz, J. R..... | 624 |
| Expression, Lighting and..... | 540, 563 | Gracefulness..... | 267 |
| Eyes and Photography..... | 201 | Grain in Gelatine Negatives..... | 454 |
| Eye and the Camera..... | 69 | Great Britain, Photographic Society of.. | 669 |
| Fabrics, Photo Tints on..... | 421 | Green Prints..... | 703 |
| | | " Toning Bromides..... | 95 |

| | PAGE | | PAGE |
|---|---------------|--|---|
| Grottoes, Photographs of..... | 421 | Jupiter, Discovery of Fifth Satellite of, by Photography | 613 |
| Gunther, H. E..... | 402 | | |
| Hale, George E..... | 724 | Kalotype No. 2..... | 100 |
| Half-tone Photo-Block Printing..... | 438 | Kansas City, Photographic Society of..... | 218 |
| Halo..... | 421 | Kent, A. F. Stanley..... | 621, 660 |
| Hand Camera and Its Abuse, The..... | 640 | Keeping Qualities of Prints from Tone-fixing Bath..... | 581 |
| " Writing, Color-Sensitive Plates for | 294 | Kites, Surveying by Photography with..... | 229 |
| Harrison, W. H..... | 375, 389 | | |
| " W. Jerome..... | 116 | Lainer, Alex..... | 302, 361, 432, 490 |
| Harvard's New Telescope and Stellar Photography..... | 577 | Lambert, Rev. F. C..... | 74, 267, 488, 750 |
| Harvest of '91, The..... | 1 | Language, Instantaneous Photography of..... | 201 |
| Hausdorf, R..... | 434 | Lantern Craze in Photographic Societies..... | 545 |
| Heavens, Photography of the..... | 454 | " Optics of..... | 111 |
| Heliochromoscope..... | 295, 628 | " Slide Methods..... | 242 |
| Hill-Norris Dry Plates..... | 7 | " Slides..... | 407 |
| Hitchcock, Romyne..... | 364 | " " Abe Lizzard on..... | 690 |
| Hoboken Camera Club..... | 250 | " " An Outsider on..... | 663 |
| How Paper is Sized..... | 608 | " " Bichromated Paste for..... | 358 |
| How to Look at Photographs..... | 537 | " " Binding Glue for..... | 716 |
| Hot Water and Aristo Paper..... | 121 | " " Dyed..... | 114 |
| Hydrotypy..... | 722 | " " Ives' Polychromatic..... | 225, 229 |
| Hydroquinine and Eikonogen Developer | 639 | " " Making..... | 564 |
| " Developer without Sulphite | 613 | " " Remarks on Color of..... | 47 |
| " Developer, Yellow Prussiate in..... | 196 | " " Subjects for..... | 685 |
| " Rapid..... | 81, 361 | " " Toning with Uranium Salts..... | 47 |
| Hypnotism by Photographs..... | 739 | " " Wet or Dry..... | 522, 570, 665 |
| Hypo Bath Citric Acid, Precipitating..... | 671 | Lea, M. Carey..... | 524 |
| " in Potassium Iodide..... | 548 | Lee, A. C..... | 639 |
| | | Lens, Adapter for..... | 742 |
| Illuminated Objects, Brightness of..... | 646 | Lens for Long and Short Distances..... | 38 |
| Imperial Dry Plate Co..... | 3 | " Photography without..... | 742 |
| Individuality in Photography..... | 534 | " The "Concentric"..... | 330 |
| Industrial Photography..... | 729 | Lenses, Machine for Making..... | 580 |
| Instantaneous Camera, New Model..... | 103 | Letter from Germany..... | 38, 60, 133, 262, 325, 390, 454, 518, 581, 646, 711 |
| " Hand Camera..... | 133 | Lichtdruck, About..... | 270, 305, 332, 365 |
| " Photography with Electric Spark..... | 676 | Lithographic Glass Plates..... | 68 |
| Intensifier with Copper Bromide and Silver Nitrate..... | 640 | Light and Color, Morning and Evening..... | 133 |
| Intensification for Collodion Negatives..... | 130 | Lights, Brightness of Solar and Artificial..... | 646 |
| Intensifying Negatives of Line Subjects..... | 229 | Lightning, Negative Made by Flash of..... | 388 |
| Intensity of the Light of the Sky..... | 325 | " Photographs of..... | 549 |
| International Association of Photography..... | 421 | Lighting and Expression..... | 540, 593 |
| " Exposition of Photography..... | 358 | Lightning Photograph..... | 453 |
| " Photographer's Association..... | 166 | Line Subjects, Intensifying Negatives of..... | 229 |
| " Photographic Congress..... | 36 | Lippmann, M. G..... | 406 |
| " Union of Photography..... | 380, 650 | " New Results Obtained by..... | 358, 742 |
| Iodide of Potassium Contaminated with Hypo..... | 548 | " Process for Photographing Spectrum..... | 103 |
| Iodine as an Accelerator for Hydroquinone..... | 228 | " Direct Process of Photographing in Natural Colors..... | 390 |
| Italian Tax on Photographic Reproductions of Art Objects..... | 515 | Lowell Camera Club..... | 125, 509 |
| Iron Furnace, Photographing Interior of..... | 4 | Luminous Photographs..... | 644 |
| " Salt Papers, Imitating Platinum..... | 295 | Lynn Camera Club..... | 347, 379 |
| Ives and Vogel, Controversy..... | 486 | | |
| " F. E..... | 628 | Machine for Mechanical Printing..... | 646 |
| " Mr. Fred. E., Lecture at Royal Institute..... | 330 | Magnetic Curves Recorded by Photography..... | 614 |
| " Mr., in London..... | 421 | Magic Photographs..... | 408 |
| " Polychromatic Lantern Slides..... | 225 | Magnesium Flash Light..... | 421 |
| Ivoryette..... | 31 | " " " A Short Form of..... | 723 |
| | | " " Lamp, A New..... | 67 |
| Jaborandi, Tincture of, in Orthochromatic Work..... | 421 | " " Light, Intensity of..... | 9 |
| Janssen and Peligot Metals..... | 358 | " " at Fancy Dress Balls..... | 262 |
| Japan, Great Earthquake in..... | 218 | Manganese Salted Paper Prints..... | 229 |
| " Photographic Society of..... | 380, 702, 763 | " Salts in Photography..... | 417, 421, 581 |
| Jones, Chapman..... | 685 | " " Sensitive..... | 295, 389 |
| | | Marine Photography..... | 353 |
| | | Marshall, Charles P..... | 285 |
| | | Mars, Photographs of..... | 484 |

| | PAGE | | PAGE |
|--|--------------|--|--------------|
| Manson, T. O..... | 442 | Orthochromatism, Universal..... | 421 |
| Mealiness in Prints..... | 447 | “Outsider, An”..... | 522 |
| Medical Science and Photography..... | 321 | Packing Dry Plates, New Method of.... | 716 |
| Meldola, R..... | 16, 51 | Painting, Photography in Relation to... | 550 |
| Metals and Paper, Paste for | 523 | Pall Mall Exhibition, The..... | 632 |
| Meteorology and Photography...137, 175, | 588 | Palmer, J. A., Portrait of, Received.... | 7 |
| Metol and Glycin..... | 261 | Panoramic Projections..... | 358 |
| Metol as Negative and Positive Developer. | 490 | Paper, How Sized | 698 |
| “ Developer..... | 385, 454 | “ Making Transparent..... | 387 |
| Methylated Spirit, English..... | 73 | Para-amidophenol..... | 81 |
| Mexico, Experience of an Amateur Pho- | | “ Citric Acid, Solvent for..... | 707 |
| tographer in | 260 | “ Developer | 293 |
| Mica for Dry Plates | 163, 517 | “ Dr. Stolze’s Formula..... | 164 |
| Microscopic Cover Glasses, Clouding of .. | 708 | “ Developer of Dr. Eder... .. | 67 |
| Miethe, Dr. A..... | 81 | “ Nitrate for Developers..... | 387 |
| Milk, Photograph of Man Watering..... | 4 | Para-amidoquinone | 229 |
| Minchin, G. M..... | 633 | Park, Frederick..... | 444, 464 |
| Mistake, A Terrible | 631 | Paste for Metals and Paper | 523 |
| Moonlight Effects..... | 492 | Partridge, W. E..... | 232 |
| “ Monobrombrenztraubensäure,” as Ac- | | Paul Revere, Lecture and Lantern Exhi- | |
| celerator..... | 262 | bition | 69 |
| Morning and Evening Light and Color.. | 133 | Payne, F. E..... | 245 |
| Mountant, Gelatine <i>versus</i> Starch..... | 689 | “ F. Fitz | 656 |
| Mounting Glue for Mirror..... | 200 | Pearson, G. W..... | 178 |
| “ Photographs, Hints on..... | 257 | Peary Expedition, Photography on..... | 740 |
| Mounts, Bronze Powder, Danger of, on.. | 356 | Peligot Medal..... | 103, 358 |
| Muth, James R. (Obituary)..... | 152 | Percentage Solutions, Tables for..... | 120 |
| Natural History, Photographing Specimens of .. | 260 | Perspective Drawings, Use of Photo- | |
| Negative Washer, New..... | 411 | graphs in Preparing .. | 619 |
| “ Who Does It Belong To? | 166 | Petite Kamaret..... | 373 |
| Negatives, Clearing Solution for Yellow. | 579 | Philadelphia, Photographic Society of, | |
| “ Do They Lose Density in Fix- | | 30, 91, 153, 211, 286, 350, 412, 668, | 761 |
| ing? | 553 | Phosphate of Sodium for Toning | 387 |
| “ Grain in Gelatine | 454 | Photochromo-engraving | 166 |
| Newark Camera Club | 346 | Photo-chronography | 19 |
| New York Camera Club, Exhibition | 193 | Photo-chronograph for Latitude and | |
| “ “ “ Club’s Excursion | 609 | Longitude..... | 645 |
| “ “ “ Honors for..... | 210 | Photo-Corrector..... | 677 |
| “ No-Gold ” Toning Bath..... | 282 | Photo-electric Cells..... | 633 |
| Norath, J. von..... | 397 | “ Engraving, Hints on..... | 749 |
| Nutt, H. S..... | 310 | Photographers’ Association of America, | |
| Obituary (Charles H. Swift) | 96 | 58, 311, | 507 |
| “ (Donald Ramsey) | 600 | Photographic Chemistry..... | 16, 51 |
| “ (George F. Schreiber)..... | 56 | “ Instruction | 19 |
| “ (James R. Muth) | 150 | “ Limits | 616 |
| “ (James V. Escot) | 88 | “ Schools | 262 |
| “ (Lewis Morris Rutherford)..... | 371 | Photography by Rule..... | 527 |
| “ (Willard H. Fuller) | 56 | Photo-Mechanical Printing from Reversed | |
| Objectives, The Coloring of..... | 229 | Image in Camera... .. | 580 |
| Opera-Glass Camera..... | 742 | Photo-Micrography, Drawings from, | |
| Optical Lantern, New Devices with..... | 266 | Method of Making..... | 516 |
| “ Glass..... | 624 | “ Note on..... | 516 |
| Optics of the Lantern..... | 111 | “ Practical..... | 621, 660 |
| Orange Camera Club | 638 | Photo-Typography..... | 19 |
| Orthochromatic Collodion Emulsion | | Photogravure | 38, 568, 593 |
| Processes..... | 206, 247 | Photo-Typogravure, Progress of | 166 |
| “ Emulsion, Collodio-Bro- | | Photoxylography, A New Method of.... | 432 |
| “ mide | 377 | Photozincography..... | 591 |
| “ Plates in Astronomical | | Piffard, Dr. H. G..... | 516 |
| Photography..... | 295 | Pike, J..... | 687 |
| “ Sensitizing..... | 132 | Pittsburgh Amateur Photographers’ So- | |
| “ Photography and Indus- | | cietv Exhibition..... | 219 |
| trial Application..... | 650 | Plates, Defects Produced in, by Time .. | 532 |
| “ Work, Tincture of Jabo- | | “ Failures in | 133 |
| randi in..... | 421 | “ New Way of Packing | 613 |
| Orthochromatism | 19, 229, 655 | Platinotype, Improvement of .. | 265 |
| “ Discussion on..... | 486 | “ Paper, Utilization of Spoiled | |
| “ Over-Exposure, a Ra- | | Process, Improvement in .. | 678 |
| tional Method of..... | 655 | “ Pizzghelli’s Im- | |
| | | proved | 402 |
| | | Platinum and Platinum Residues..... | 555 |

| | PAGE | | PAGE |
|---|-----------------|---|----------------------------------|
| Platinum Bath, New..... | 69 | Rutherford, Lewis Morris (Obituary)... | 371 |
| “ Iron Salt Papers, Imitating | 295 | Rye Flour for Paste | 387 |
| “ Increase in Supply | 452 | | |
| “ Light, Incandescent..... | 36 | Salted Paper for Black Tones..... | 6 |
| “ Printing Formula | 165 | Schreiber, George Francis, Death of | 32, 56 |
| “ Prints Toned with Uranium..... | 655 | Schniffner, Prof. F. | 619 |
| “ Toning Aristotype Paper with | 395 | Sensitiveness of Dry Plates, Changes in, | |
| “ “ on Mat-surface Paper | 442 | | 325, 390 |
| “ “ with Gelatino-chloride | 106 | Sensitometer Scale, Warnerke's | 126 |
| Polar Expedition, Photography on..... | | Sepia Platinotypes..... | 715 |
| Police, Photography and | 38 | Shakespeare, Photographic Reproduction | |
| Polychromatic Lantern Slides, Ives', 225, | 229 | of 1623 folio..... | 356, 395 |
| Polychrome Photography | 650 | Sherrard, C. C. | 120 |
| “ Projections | 358 | Ship, Suspension Apparatus to Take | |
| “ “ by Means of | | Pictures on | 19 |
| Non-Colored | | Shutter Adapter..... | 373 |
| Photographs | 683, 717 | “ Speed | 309 |
| Portraits, Copying Old | 585 | “ “ Method of Testing | 643, 735 |
| Positive Developer, Metol as..... | 490 | “ with Double and Variable Open- | |
| “ Printing Methods | 149 | ings..... | 260 |
| Positives Developed by Smoke..... | 101 | Shutters, Speed and Efficiency of..... | 755 |
| “ Development of Weakly Printed, | | Silver Haloid Molecule, Disruption of | 524 |
| on Glass or Opal..... | 758 | “ Nitrate in Emulsions, Effect of..... | 324 |
| “ Glass | 298 | “ Prints, Spots on | 287 |
| “ Production of, in the Camera | 481 | “ Sulphite, Experiments on | 387 |
| Powell, Dr. N. A. | 567 | Size of Plates for General Use | 267 |
| Preserving Sensitized Plates | 19 | Skeel, Adelaide..... | 13, 746 |
| Prices, The Key to Better | 284 | Sky, Intensity of the Light of | 325 |
| Prindle, Edwin J. | 307 | Skylight, Size and Arrangement of..... | 127 |
| Pringle, Andrew | 114, 730 | Small Lanterns and Dissolving Views | 695 |
| Printing and Toning Albumen Paper.. | 639 | Smoke as a Developer for Positive | |
| “ Formula, O'Neil's..... | 255 | Pictures | 101 |
| “ Methods | 149 | Snow Pictures..... | 750 |
| “ on Curved Surfaces | 288 | Society of Amateur Photographers of New | |
| “ Out Papers, Development of..... | 302 | York.... | 90, 125, 216, 347, 574, 670, 765 |
| “ Silver | 41 | Societies, Photographic Conditions In- | |
| Prints, Color of, Restored | 420 | fluencing Welfare of | 375 |
| “ Curling Off Card | 416 | Sodium—Ferric Oxalate..... | 31 |
| “ Reducing Silver..... | 8 | Solar and Artificial Lights, Brightness of. | 646 |
| “ Treating Over or Under-printed.. | 740 | “ Camera, Fire from..... | 448 |
| Print, Washer, New | 411 | “ Prints, Developing..... | 95 |
| Professional Photography, Decline of.. | 518 | “ “ Yellow..... | 159 |
| Progress or Fashion | 694 | Sothen, C. E. Von | 492 |
| Projection of Photographs at a Distance | | Spectrum Sensitiveness of Haloid Silver | |
| by Telegraph | 708 | Salts | 559 |
| “ in Day-time by Lantern..... | 716 | Spitaler, Rudolf..... | 400 |
| Pyrogallol and Ammonia Developer, 517, | 671 | Spirit Pictures, How to Make..... | 31 |
| “ “ Soda | 615 | Sporting Photographs | 262 |
| | | Stained Glass Windows, Photographs of. | 200 |
| Ramsden, Eye-Piece for Focusing..... | 267 | Standards, Photographic Society's..... | 561 |
| Ramsey, Donald (Obituary) | 600 | Starch Paste, How to Make | 542 |
| Reader, C. B. | 723 | Star Photographs..... | 37 |
| Reducer, Belitzke's..... | 229 | Stars, Photography of the | 486 |
| Reducing Silver Prints..... | 8 | “ Time of Exposure of Plates for..... | 485 |
| Red Lantern for Photographic Trips | 518 | Stellar Photography and Harvard's New | |
| “ Platinotypes, Formula for | 715 | Telescope..... | 577 |
| “ Tones with Uranium | 294 | St. Louis Camera Club | 318, 573 |
| Reinforcement by Mercury Bichloride.. | 742 | Stereoscope, Reversing Eye-Piece for | 37 |
| Residues, Improved Method of Treating | 505 | Stereoscopic Photography | 425, 690 |
| “ Photographic | 687 | “ “ Treatise on..... | 486 |
| Restored Prints, Color of..... | 420 | “ Pictures | 178 |
| Retoucher, Electric..... | 228 | “ Printing Camera..... | 742 |
| Retouching by Electricity | 599 | “ Vision..... | 166 |
| “ Varnish | 543 | Stereoscopy | 650 |
| Reversed Negatives from Reversed | | Stieglitz, Alfred..... | 47 |
| Image in Camera | 580 | Stripping Medium, Carbutt's..... | 260 |
| Robinson's, H. P., Developer..... | 32, 671 | Stoddard, S. R. | 753 |
| Robinson, H. P., 78, 168, 368, 429, 454, | 534 | Stolze, F. | 680, 719 |
| Rodinal | 9, 81, 133, 295 | Sulphuric Acid, Dry, How to Mix With | |
| Royal Society Conversazione..... | 414 | Water..... | 704 |
| | | Sutcliffe, Frank M..... | 537 |
| | | Summer Work, A Hint for..... | 335 |

| | PAGE | | PAGE |
|--|--------------------|---|------------------------------|
| Sunlight and Exposure Times, Variations of..... | 161 | Uranium-Copper Process, Letellier's.... | 454 |
| Sun. Photography of the Spectrum of Bright Spots on..... | 486 | “ Salts, Toning Lantern Slides with..... | 47 |
| “ Some Results and Conclusions Derived from Photographic Study of..... | 724 | “ Toning..... | 294 |
| Sunshine, Amount of, in British Isles.... | 420 | “ “ of Platinotypes..... | 655, 715 |
| “ Survey ” Photographs..... | 330 | Valedictory..... | 737 |
| Surveying by Photography with Kites.... | 229 | Valenta, E..... | 6, 389, 758 |
| Swift, Charles H., Death of..... | 96 | Value of Good Photographs..... | 394 |
| Talbot Archer...9, 73, 201, 267, 333, 397, | 616 | Vidal, Léon...19, 103, 166, 229, 295, 358, | 421, 486, 650, 683, 717, 742 |
| Taylor, J. Traill..... | 111 | Vienna Exhibition, Diploma..... | 345 |
| Toning Bath with Aluminium Chloride.. | 324 | Visibility of Light, Limit of..... | 37 |
| Teachers, Lectures on Photography to Official..... | 325 | Vogel, Dr. H. W...38, 69, 133, 201, 262, 325, | 390, 454, 518, 581, 646, 711 |
| Tele-objective, Miethe's..... | 69 | Von Sothen, C. E..... | 492 |
| “ “ Glasses..... | 325 | Wallace, Eilerslie..... | 41, 298, 425, 585 |
| “ “ and their Artistic Failures..... | 262 | Walshe, Thomas B..... | 631 |
| Tele-photographic Lens..... | 25, 331 | Warnerke, Léon..... | 338 |
| Tele-photography..... | 166, 229, 405, 650 | “ Sensitometer Scale..... | 126 |
| Telescope, The Bruce Photographic, at Harvard..... | 710 | Washer for Negatives..... | 411 |
| Test Papers and Their Uses..... | 129 | “ Prints..... | 411 |
| Theatrical Scenes Painted from Photographs of Portugal..... | 612 | Wastes, Photographic, Recovering..... | 4 |
| Thomason, G. A..... | 690 | Watch Case, Pictures in..... | 672, 735 |
| Thornton-Pickard Shutter..... | 283 | Water-Color Paintings, Fading of..... | 227 |
| Tin Alloy for Glass..... | 165 | Waterhouse, Col. J...206, 247, 377, 405, 438 | |
| Toning after Fixing, Formula for..... | 294 | Watkins' Exposure Meter..... | 307, 476, 599 |
| Toning Albumen Paper..... | 288 | White Rose Portrait Panel..... | 313 |
| “ and Fixing Bath, Action of..... | 591 | Windows, Decoration of..... | 729 |
| “ “ Collodio - Chloride Prints..... | 5 | Winter Photography..... | 705 |
| “ “ Aristo Prints..... | 351 | Without His Camera..... | 13 |
| “ and Printing Albumen Paper..... | 639 | Wood, Photography on..... | 518 |
| “ Bromides, Green..... | 95 | Woodbury, Walter E...55, 85, 109, 147, | 274 |
| “ Bromide Pictures..... | 201 | World's Congress, Auxiliary..... | 314 |
| “ Gelatine-Chloride Paper with Platinum..... | 10 | “ Fair, Amateur Photography at..... | 209 |
| “ Lantern Slides with Uranium Salts..... | 47 | “ “ Classification of Photographs and Apparatus at..... | 452 |
| To Little Falls..... | 232 | “ “ English Visitors to..... | 453 |
| Toning Platinum Prints with Uranium.. | 655 | “ “ Fees for Hand Cameras at..... | 516, 667 |
| “ with “No-Gold” Solution..... | 447 | “ “ French Committee on..... | 295 |
| Tornado, Photographs of..... | 133 | “ “ Photographs at..... | 452 |
| Toronto Camera Club..... | 3, 734 | “ “ Program of Dedicatory Ceremonies..... | 602 |
| Tracings, Copying, in Colors..... | 95 | Yellow Glass for Sky Negatives, Use of..... | 131 |
| Training of Photographers, Deficiencies in..... | 500 | “ Negatives, Clearing Solution for..... | 579 |
| Transparent, Making Paper..... | 387 | “ Prussiate of Potash in Developer..... | 196 |
| Trimming Board, Perfection..... | 372 | “ Screens for Lens..... | 200 |
| Truth, Photography and..... | 711 | Vonkers Photographic Club..... | 316, 409 |
| | | Zeiss' New Lenses..... | 357 |
| | | “ Objectives..... | 420 |



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A STUDY IN POSING.

ANTHONY'S Photographic Bulletin.

EDITORS :

PROF. CHARLES F. CHANDLER, PH.D., LL.D.

PROF. ARTHUR H. ELLIOTT, PH.D., F.C.S.

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No. I.

THE HARVEST OF NINETY-ONE.

THE year that has just passed was one of unusual activity in the field of photography, and it may not be unprofitable to pause a little and note the advances of the past twelve months.

Beginning with the basis of modern photographic processes, we see a steady movement for the improvement of the dry plate in its various modifications, first as films and also on the glass support. In films we do not believe there has been much encroachment on the domain of glass plates in the work of the professional photographer, except in a few special cases where films have been used for panoramic pictures. Several new ideas for the support of the gelatine film have been heard of, such as a metallic frame and sheets of mica, but we have not seen any practical results with them. A substitute for gelatine has also been suggested in the form of agar-agar, the Japanese vegetable gelatine ; here, also, no practical results have been achieved. It is probable that in the last case the absence of nitrogenous matter in the agar-agar may exclude its use for dry plates. Collodion plates have been made, both in Germany and England, that are said to equal in sensitiveness those made with gelatine, and a factory for their manufacture has been started. During the past twelve months orthochromatic plates have come more into use in the United States, and they are certainly destined to be the plate of the future for the progressive photographer.

Photography in the colors of nature has received much attention and principally from the researches of M. Lippmann of Paris. These latter were only a modification of the production of color by the interference of light under the influence of thin films, but they started other workers into activity, and Mr. F. E. Ives, of Philadelphia, has produced some startling results in the production of pictures in colors made by the aid of photography alone. Mr. Ives' results are yet in their infancy, and depend on the application of another theory than that of interference, the production of the colors of nature by the blending of

three or more primary colors (if we may so call them) according to their action through certain color screens in the production of the negative.

In the matter of apparatus the activity has been in the production and improvement of hand cameras, such as the kamaret and magazine; in the first variety using films or plates at will, and in the second using cut celluloid films or plates as desired. In these magazine cameras a number of plates are loaded in at one time and exposed as may be necessary, by the use of some device working on the outside.

The new Jena glass has been applied with much success to the production of photographic lenses, and we note that an American optical works are to use it for the photographic lenses made by them. Yet another advance in the optical apparatus of photography is the new telephotographic lens of Dallmeyer, giving enlarged images of distant objects. We are waiting the arrival of these lenses with interest.

The question of the speed of shutters has again been taken up by several good workers, with a confirmation of the results published in the *BULLETIN* several years ago by Dr. Laudy. There has been a large amount of nonsense written upon this subject, which we hope is a thing of the past. We call special attention to the good work of Mr. Francis Blake, of the Boston Camera Club, Professor L. Weber, of Kiel, in Germany, and the photographic society of Japan, the reports of which are found in the pages of this journal for last year.

The so-called automatic photographic machines have proved a failure in England; it remains to be seen if American ingenuity will make them a success here.

Aluminium has been proposed as a substitute for magnesium in flash light photography, but we have yet to see results obtained with it. It appears to us that its ignition point is too high for this purpose.

In the matter of developers we have had many novelties. Fancy mixtures of eikonogen and hydroquinone were the order of the day at the beginning of the year, and some of these proved very useful to those who like simple one-solution developers. In many cases the manner and completeness of their admixture were more the reason of their success than any new substances in their composition. Pyrocatechin has made several attempts to come into favor, but without much success, probably owing to its expense and no particular advantages. Formaldehyde was recommended by some of our German friends as an addition to the emulsion and also to the developer, but its practical adoption is yet to come. Oil of turpentine was also recommended as an addition to the developer; its use is without advantage in our hands. Crystallos is a mixture that is remarkably good in the results obtained with it, and is an example of a thoroughly mixed and adjusted developer. Last but not least in this direction we must note para-amidophenol, the latest and certainly the most remarkable developer we have ever used. Its extended use will depend on its price, which is now very high.

Much good work was done at the congress at Brussels in the way of providing for standards in photographic apparatus and methods. We sincerely hope the recommendations there formulated will take such shape that we shall have an international system in photography on a par with that found in other arts and sciences. Standard plate sizes, standard light and standard methods of sensitiveness for dry plates, as well as standard weights and measures, are absolutely necessary to the progress of photography.

Printing and its methods have seen quite a number of changes during the past year. Albumen as a basis for the positive picture still holds its position in the estimation of the professional photographer, but other methods of producing such pictures are rapidly forging to the front. Aristotype, a gelatine-surface, paper has many admirers, while the new collodion "Aristo" paper is used by a large number of the best and most progressive photographers of to-day. Another candidate for favor is the Kallitype No. 2, which is a mat surface paper with development as a means of finishing the picture; but it is said to be very simple. The samples of its work that we have seen are very good.

Platinum printing should now have nothing to retard its progress, the price of that metal having fallen from its former high position. We also note an advance in the production of gold salts; Professor Lainer, of Vienna, having produced a gold and potassium salt which is not deliquescent, contains no free acid and is always of the same composition, containing 52 per cent. of gold. This is only a little less than the gold and sodium salt usually sold in tubes.

From the amateur side photography has made many strides during the year. New clubs are forming all the time, and we have to record only one case of disbanding. In the way of exhibitions America has done nobly and the fame of her workers has advanced. The names of McMichael, Hastings, Dumont, Clarence B. Moore, Nelson and many others have become as familiar in the exhibition halls of the old world as in the new.

In the application of photography to astronomy, who does not feel proud of Harvard and Professor Pickering, Lick Observatory and Professor Burnham? The records of these institutions in astronomical photography is the admiration of the world. Be it also remembered that the work at Harvard started with the donation of apparatus from Mrs. Henry Draper, whose husband was one of the pioneers in this field of research.

Photography applied to surveying is again receiving the attention it deserves, and we hope that during the coming year we shall hear of more advances in this field.

Photo-mechanical processes advance so rapidly that we are constantly called upon to admire some new and beautiful productions in this phase of photographic work. The cheapening of methods progresses, and we shall soon have pictures produced by photography almost as cheaply as printing with type. The application of electricity in this direction promises great results.

Such is a very brief survey of the advances in photography during the past twelve months. We know it is imperfect, but our space is limited, and we could only hope to recall the lines of work open for the year to come. Let us hope that the harvest then will be yet richer than the one we have gathered now.

EDITORIAL NOTES.

DR. J. J. ACWORTH, so well known in photographic circles, has undertaken the management of a new concern in England for the manufacture of dry plates, which will be known as the Imperial Dry Plate Co., Limited. Extensive works are in progress at Cricklewood, which are now nearly completed.

THE Toronto Camera Club, formerly the Toronto Amateur Photographic Association, having outgrown its original quarters as well as name, has re-

moved to a new building which is fitted with everything needful for the accommodation of its members. The new rooms are supplied with backgrounds and accessories and an electric light of 100 candle-power. The rooms are open day and evening, and a lantern slide entertainment will be provided each month during the season.

A SMOKING concert will be given by the Society of Amateur Photographers of New York on Saturday evening, January 9th, at which time a choice programme of slides, music and recitations will be provided.

A MEETING called by the scientific men of the State of Ohio with the purpose of organizing a State Academy of Science was held in Columbus on the 31st ultimo, and among other papers announced was one on "Photography in Scientific Work," by Prof. J. N. Bradford. Our profession is rapidly taking a foremost rank in scientific work of all kinds, and is being recognized more as an important adjunct thereto every day.

MR. HEPWORTH, President of the Holborn Camera Club, showed at a recent exhibition of slides, a picture of a London milkman in the act of filling his cans with water, while the cow which is supposed to be the source of supply stands contentedly by. Mr. Hepworth says that this was one of those rare occasions which sometimes present themselves, when the story is told with a snap shot before the "sitter" is aware that he has been "taken," and that the subject in question was not posed, but photographed exactly as the incident occurred.

AT the recent exhibition of prints of the Syracuse Camera Club over 650 pictures were shown, prominent among which were a number from members of other clubs. In this class might be named Miss Catherine Ward Barnes, of Albany; Messrs. Robt. S. Redfield, of Philadelphia; R. C. Fuller and Chas. A. Stoddard, of Providence, and others. The work of the club was of a high standard of excellence, and the entire affair reflected great credit on the club.

AN interesting piece of photographic work was recently accomplished by Messrs. Meachim and Sabine, of Youngstown, O., in photographing the bottom and interior of Girard Furnace, the stack of which was seventy-five feet high, and the interior, of course, perfectly dark. An exposure of a half hour was given, with the camera upside down, and a very successful negative resulted.

THE Detroit Lantern Club gave a delightful exhibition on the 17th of December from slides made by members of the International Lantern Slide Exchange, the subjects being from Spain, Portugal and Gibraltar. The club has arranged for a series of twelve exhibitions during the winter.

A FRENCH scientist has demonstrated that gold and silver waste may be deposited by suspending in the solutions where they exist, a carbon plate attached to the positive pole and a zinc plate to the negative pole of a battery, about an inch and a half apart. On closing the circuit, a black deposit is formed on the zinc, which then drops to the bottom of the dish containing the whole, and may readily be melted into a lump of metal in a crucible.

THE Brooklyn Academy of Photography gave their first exhibition of prints from the 17th to the 19th of December at their new rooms. The representation was not only large, but was marked by an artistic feeling and quality not often met with in a collection of this kind. Prominent among the contributors were Messrs. Frank La Manna, the President of the club, J. B. Morison, Starks W. Lewis and H. Allen Smith. A fine collection of lantern slides was a feature of the exhibition.

FADED silver prints may be copied with advantage by treating them with a dilute solution of bichloride of mercury, which tends to remove the yellow tone and restore the high lights to their proper color. If, however, for any reason it is undesirable to treat the print, a very satisfactory negative may be obtained by immersing the plate before exposure in a bath of eosine to make it sensitive to yellow rays.

It is proposed to form a new amateur photographic society in Lowell, Mass., and a good deal of enthusiasm exists on the subject in that city.

THE first of a series of lantern slide exhibitions to be given by the St. Louis Camera Club during the winter was given in December at the club's new quarters to an audience of more than six hundred, illustrating "Mexico, our Sister Republic." The affair was most enjoyable.

THE following formula for toning and fixing collodio-chloride prints is said to produce excellent results :

A.

| | |
|------------------------------|------------|
| Hyposulphite of soda..... | 200 grams. |
| Sulpho-cyanide ammonium..... | 20 " |
| Acetate of lead..... | 10 " |
| Water..... | 700 c.c. |

B.

| | |
|----------------------|----------|
| Alum..... | 5 grams. |
| Citric acid..... | 5 " |
| Nitrate of lead..... | 10 " |
| Water..... | 300 c.c. |

(Forming a milky solution.)

After mixing A and B a quarter sheet of silver paper, cut into small pieces, is added, and the whole allowed to stand 24 hours. It is then filtered and 30 c.c. of chloride of gold (1 to 100) thoroughly incorporated by adding slowly and shaking. The prints are immersed without washing, face down, and air bubbles carefully removed, and toning commences at once, the prints first turning yellow and weak, but soon assuming a sepia, then brown, purple-brown, violet, blue, bluish black, deep black, and, if carried too far, a gray color. The color obtained in this bath remains after washing and drying. The formula given is sufficient for 25 sheets of paper 50 x 60 centimeters. After toning about one-third of that amount, however, it is well to add to the bath 100 grams of hypo dissolved in 200 c.c. of water.

THE Albany Camera Club gave their first slide exhibition on the interchange system on the 20th December with great success. The club will give several

such during the winter for the purpose of meeting the heavy expense attendant on getting their new and commodious rooms ready for occupancy.

A MOVEMENT is on foot to organize a club in Sioux City, which meets with hearty responses from many prominent amateurs in that place.

E. VALENTA prepares a salted paper in the following manner which he claims will produce fine black tones very similar to platinotypes. He first dissolves 10 grams of ammonium chloride in 100 c.c. of water; in a separate receptacle he soaks 3 to 4 grams of gelatine in water, and in still another vessel 3 to 4 grams of finely powdered French colophony are made soapy with ammonia, which is accomplished by stirring it gradually into boiling water to which has been added a little ammonia. This latter, soapy solution is then mixed with the swollen gelatine, and when all is quite dissolved the solution of ammonium chloride is mixed with it and the whole diluted with pure water to make in all 1,000 c.c. The next step is to neutralize it with dilute hydrochloric acid, and after that add a concentrated solution of citric acid in quantity sufficient to create an acid emulsion of a milky color. Rives paper is the best for coating, and after being dampened with a sponge with the warm solution should be floated on it for three minutes and suspended in a warm room to dry. It is sensitized by floating for two or three minutes in a 10 or 12 per cent. solution of silver nitrate in water and dried in the darkroom. It is better to fume it before printing, as with albumen paper. Soak for a few minutes after printing, and fix in a 10 per cent. solution of hypo rendered acid with acid-sulphite of soda. This will produce prints of a reddish brown color, brilliant and clear. To obtain the black tone required to resemble platinotypes, the prints should be first placed in a bath composed of 0.3 gram chloride of gold, 8 grams of borax and 1,000 c.c. of water, and then left till by transmitted light they show a very dark violet tone, when they are to be rinsed and immersed in a bath of 1 gram potassium chloro-platinite, 300 c.c. water and 15 to 20 drops of nitric acid. To obtain a red chalk tone an acid bath of uranium nitrate may be substituted for the gold bath.

A VERY successful print exhibition has just been held by the Newark Camera Club, at which over 250 frames were shown as the result of its members' work. The Club has been in existence only since 1888, and has made an enviable record in so short a time. The catalogue is an excellent one.

THE recent exhibition of slides by the San Francisco Camera Club given in connection with the Dolls' Congress in aid of a local charitable institution in that city, proved a grand success, and doubtless did much to swell the aggregate of the receipts for the worthy object. It was a happy thought well carried out.

WE are in receipt from Mr. H. Redmon, of Cynthiana, Ky., of samples of his work on aristotype paper that demonstrate the value of the paper for showing the details of a good negative, as well as the ability of the artist to produce very excellent effects with both. The studies are of children and are most dainty in posing and general execution.

WE have also a portrait of Mr. J. A. Palmer, of Aiken, S. C., and with it a line in which he sets forth the claim that he is the oldest daguerreotypist in the United States. We congratulate him on the proud position he claims and extend our best wishes for many more years of usefulness and enjoyment.

THE projected expedition by Professor R. L. Garner to the African Gorilla Country for the purpose of obtaining photographic and phonographic records of gorilla life and language opens up some very interesting ideas, and the results of his researches, if he is so fortunate as to return to relate them, will certainly be full of scientific interest and value.

THE "British Journal Photographic Almanac" for 1892, edited by our good friend, J. Traill Taylor, is now ready, and as usual full of good things. We shall notice it in detail later.

WE have received from Dr. George L. Sinclair, of Halifax, N. S., a very pretty view of "Fairy Cove," near that city, with "All the compliments of the season to you." We tender our best thanks to the kind doctor for his remembrance, and wish him all the happiness that he can enjoy, especially in catching such charming scenes as the one he sends us.

[From our Special Correspondent.]

ENGLISH NOTES.

WHEN this meets the eyes of the readers of the BULLETIN it will be the (leap)-year of grace 1892—and I wish my American brethren a very happy and prosperous New Year.

Detaining the Old Year—1891—for a moment, let us glance at what he has given us. One new developer—Para-amidophenol, now christened "Rodinal"—has been produced by Dr. Andresen, of Berlin. It is sold, at present, in the liquid form; and it produces results intermediate with those of Hydroquinone and Eikonogen. It promises to be at least useful.

J. B. B. Wellington and Hill-Norris in England and Gaedecke in Germany have succeeded in producing collodion dry plates which rival in rapidity an ordinary gelatine plate. A factory has been built near Birmingham for the manufacture of the Hill-Norris plate, and it will soon be put on the market.

Emulsion printing-out papers have found increased favor; and the last few weeks have seen the introduction by the Ilford Co. of a gelatino-chloride paper of this class which has rapidly found favor, and which is sold at the same price as ordinary sensitized paper.

Great complaints have been made of the blistering of sensitized albumenized paper, and it has been stated that immersion of the prints in boiling water for a few seconds immediately after their removal from the printing frame (and before toning and fixing) is a perfect cure.

In many of our large towns the introduction of the electric light in place of gas for general lighting purposes has made great strides during 1891. Professional photographers have not been slow to avail themselves of the opportunity thus offered; and the "umbrella form" of the arc light has been fitted

in many studios. Van der Weyde, in London, led the way in this matter several years ago; and it was only yesterday that I had the pleasure of inspecting a similar arrangement in the studio of Harold Baker, at Birmingham.

In the uncertain climate and under the lowering skies of England, a certain and to-be-relied-on source of light is of the greatest value; to say nothing of its service after sunset, and for fancy balls, etc.

I regret to have to chronicle a serious explosion of the gas bags at a lantern show given recently at Ilkeston, in Derbyshire. One person was killed, and several were severely injured. The cause doubtless was (although it was not actually proved at the inquest) the accidental mixing of the oxygen and hydrogen gases in the same bag. My own bags have always been boldly lettered O. and H.; the letters being over a foot long, and the strokes an inch in thickness. We have now a National Lantern Society, and it has been proposed that this Society should hold examinations and issue certificates of competency to successful operators; but probably accidents will continue to happen as long as human nature continues as it is. Those who took advantage of the Ilkeston explosion to preach on the superior advantages of gas cylinders over bags, were rather disconcerted when, a week later, a pressure gauge attached to a cylinder burst, and buried itself in the ceiling—fortunately without hurting anybody. Several accidents with these pressure gauges have happened lately, and I fear that they are unreliable. A better plan is to *weigh* the cylinder when full, by means of a spring balance, and then to weigh it again each time before using. Every three ounces diminution in weight, shows that one cubic foot of oxygen has been used.

In lens making the use of the new Jena glass continues to increase. But the “telescopic lens” of Dallmeyer, by which objects at considerable distances are made to produce comparatively large images, is the chief optical event of the year.

Mr. E. Dunmore has published a plan for effecting that much desired object—the reduction of over-printed silver prints. They are toned, fixed, washed and dried in the usual manner, and are then soaked in the following bath for a few minutes, or until the desired reduction is effected:

| | |
|----------------------------|-----------|
| Bichloride of mercury..... | 3 grains. |
| Potassium bromide..... | 3 “ |
| Water..... | 1 ounce. |

The prints are finally well washed and again dried.

Photography continues to proffer a fine field for inventors. I note that during the year 1891 there were nearly three hundred patents connected with photography applied for at the British Patent Office. Of this large number it would be safe to say that not more than thirty (or ten per cent.) will be found in the slightest degree remunerative; and this is taking a liberal estimate.

“The Literature of Photography” for 1891 does not—at least so far as Great Britain is concerned—contain many items of importance. It includes “Gelatino-Chloride of Silver Printing,” by W. E. Woodbury; “Light” (Sir H. T. Wood); “Military Photography” (O. E. Wheeler); “Optical Projection” (Lewis Wright); “Photography in a Nutshell” (W. Tylar); “Photography as a Business” (H. P. Robinson); “Evening Work for Amateurs” (T. C. Hepworth); “Materia Photographica” (C. J. Leaper); “Holidays with the Camera” (C. W. Hastings); “Photographic Pastimes” (H. Schnauss); “The

Magic Lantern" (A. A. Wood); "Pictures Selected from the Pall Mall Exhibition" (H. P. Robinson); "Photography Applied to the Microscope" (F. W. Mills), and "Photography for All" (new edition; W. J. Harrison).

Since writing the first part of these notes, I have been able to give Rodinal—the new developer—a more thorough trial. As sold, it is a red liquid; and it is a one-solution developer, only requiring to be diluted with water to be ready for use. It works very clean, staining neither fingers nor negatives, a property which will be appreciated by many. For ordinary negative work, rodinal must be diluted with thirty times its bulk of water, which must be increased to from forty to fifty times if under-exposure be suspected. For bromide paper a dilution with at least one hundred parts of water is necessary. Altogether rodinal seems to me just the thing for beginners, or for those who only work spasmodically at photography. It gives images of a good bluish black color; but development should be carried on until the white surface of the plate is dark. The acid fixing bath is to be recommended. The makers claim that it is the "cheapest" developer. It is certainly well worth a trial.

Should this chance to meet the eye of any members of the California Camera Club, they will please to accept my best thanks for the very capitally arranged set of slides illustrating the Yosemite Valley, which I had the pleasure of seeing displayed on the screen before one of our principal photographic societies the other evening. Many of the slides were good, and one or two were quite first-rate; but the difficulties in the way of photographing Nature when she displays her beauties on such a gigantic scale must be—and are—enormous. Of the immense good effected by similar interchanges of slides, prints, etc., there can be no question; and I should like to see much more done in this direction.

A very excellent exhibition of photographs has just been opened in the Municipal Art Galleries at Leeds, an important Yorkshire town and a seat of the woolen industry. The Leeds Photographic Society claims to be the oldest in the Kingdom—if not in the world—dating back to 1852. It would be interesting to know, for comparison, the dates of the establishment of the early photographic societies in the United States, and I hope some reader of the BULLETIN may be able to furnish this information. The exhibitors at Leeds number slightly over three hundred, and they include four from America. The judges have awarded two gold, twenty silver and thirty-five bronze medals. The gold medalists are William Crooke, of Edinburgh, and Van der Weyde, of London, the award in each case being for large portraits.

In a recent lecture before the Camera Club Mr. E. J. Humphery revived the old method of obtaining a most brilliant artificial light by the consumption of magnesium wire in oxygen. Captain Abney has measured the relative brightness of the light produced by burning magnesium in oxygen and in air respectively, and he finds that in the former case the light is twelve times brighter than in the latter. The only new point (so far as I can see) introduced by Mr. Humphery was that the oxygen flask was suspended by a string, so that it could be swung during the exposure, thereby lighting up the shadows. A platinotype print was produced by this light in fifty-five seconds. It is to be regretted that a few "artificial suns" of this nature (suspended from balloons) cannot be kept burning over England during these murky winter months; at least that is the opinion of

ON THE FADING OF POSITIVE PHOTOGRAPHS.

BY P. C. DUCHOCHOIS.

THE fading of photographs originates from their sulphuration.

The reason according to T. Fred. Hardwich is "because the amount of real silver on the image is very small, and sulphide of silver in minute quantity appears pale and yellow."

It is a fact that the fading always commences in the lights of the image, even in the pure whites, that is, the paper itself, which shows that the silver organic compounds formed with cellulose, nitro-cellulose, the sizing of the paper (resinate) albumen, gelatine, the sugars (sucrate, lactate, etc.), are not entirely dissolved by the sodium thiosulphate fixing solution.

The other causes of fading are the combined action of light and dampness giving rise to oxidation from the air, and, according to some authorities, to a change in the arrangement of the silver sulphide molecules, which seems to be proved by the entire fading—since this term is admitted, although quite improper—of photographs having strongly coppery bronzed black when finished.

The sulphuration may take place either in the fixing bath or from the decomposition of the sodium and silver thiosulphate left or mechanically retained in the fibers of the paper, or from external causes, such as sulphurous emanations from coal gas, etc., acid fumes in the air, specially when dampness intervenes.

However, photographs do not necessarily fade, provided proper care be taken in the fixing and subsequent operations. I have seen when in Paris, in 1875, pictures having been simply fixed, and consequently of a bad, red color, which, although printed in 1844, did not show traces of fading. I personally possess photographs, made during my long practice, which show very little traces of fading; some printed in 1848 are quite well preserved. I must state, however, that they were obtained by development on simply iodized paper. Among those made by the printing out process on plain and albumen paper, there are some portraits I took at Bogardus', in 1856, which are still as brilliant as the day they were fixed. They were printed on paper salted at 5 per cent. and sensitized on a silver bath at 20 per cent., fixed after washing, then toned by sodium auro-thiosulphate, thoroughly washed, and the last traces of thiosulphate were not decomposed by a hypo-eliminator. We did not then have recourse to this good precaution against fading, although the process was well known, having been pointed out by Maxwell Lyte.

In the early days of photography, and until 1855-56, the following were the processes employed to change the red-brick color of photographs fixed in plain thiosulphate solution into pleasing ones. Our purpose for recording them will be understood further on.

The first process is quite simple: The proofs, after fixing but without washing them at all, were treated with a small quantity of water acidified with vinegar (acetic acid) until the desired colors were obtained, when the proofs were at once immersed in a weak solution of sodium carbonate, then washed. In this process sodium thiosulphate is decomposed with evolution of sulphur dioxide (sulphurous acid), and sulphur is thrown down. The silver, constituting the image, was therefore sulphureted. The tone was admirably fine, but the proofs faded admirably well too.

To my best knowledge the next process was devised by Blanquart Evrard

(1850). The proofs are, by this process, toned and fixed in one operation in a bath of sodium thiosulphate in which has been dissolved a quantity of silver chloride. This bath, if allowed to ripen for a certain period, gives black tones, but if it is too old the whites are liable to be tinged yellow.

When such a bath is directly acidified with a few drops of acetic acid, the tone is purple-black and the whites remain unaltered; if it is rendered alkaline by ammonia, the image, instead of being toned black, takes a warm brown or sepia tone, and by adding to the original solution a few crystals of lead acetate, the proofs will be red-violet or purple.

Hardwich, in his *Manual of Photography* of 1855, gives several formulas for fixing—coloring baths, which, however, he rightly rejected in the remarkable treatise he afterward published. We select the following :

Take of

| | |
|--|------------|
| Solution of perchloride of iron, commercial..... | 6 drams. |
| Hyposulphite (thiosulphate) of soda..... | 4 ounces. |
| Nitrate of silver..... | 30 grains. |
| Water..... | 8 ounces. |

The hyposulphite of soda is first dissolved in seven ounces of the water, the nitrate of silver in the remaining one ounce. The perchloride of iron is then poured into the solution of hyposulphite by degrees, stirring all the time. When the liquid becomes clear, the nitrate of silver is added, stirring briskly.

Lead nitrate and copper chloride were also employed, the former by Hardwich, the latter by Professor Chas. Seely, if I remember well. Alum was recommended by Sir W. J. Newton, who remarked that the bath remained clear instead of becoming muddy in the course of two or three days, which is explained by the precipitation of the sodium silver thiosulphate as silver sulphite.

Gold as a toning agent was pointed out by O'Shaughnessi as far back as 1849. The following is a gold bath I find in my note book of 1856 :

| | |
|-------------------------|-----------|
| Gold terchloride..... | 6 grains. |
| Silver nitrate..... | 50 “ |
| Sodium hypsulphite..... | 5 ounces. |
| Water..... | 1 pint. |

The silver nitrate dissolved in a small quantity of water is first added to the solution of hyposulphite, then the chloride of gold also dissolved in a little water, agitating meanwhile with a glass rod.

We need not explain the chemical changes occurring in these sodium thiosulphate compounds : they are easily understood by the photographer having studied the first principles of the science which is the basis of his art and without which one can only work in a mechanical manner.

The prints, without being previously washed, were immersed in the fixing—coloring bath, whose action was allowed to continue until the desired effect was obtained, which required from 20 to 30 minutes, unless the bath had an acid reaction* or was heated to 65–70 degrees Fahr. In the gold bath the toning even required a much longer period.†

All the proofs toned by any one of these processes faded. This was indeed a

* The acidity results from the reactions of the polythionates and sodium thiosulphate (hyposulphite).

† The reason why the coloring of proofs on ready sensitized albumen and aristotype papers proceeds more rapidly by the fixing and toning in one operation process, is because the sensitive preparation—gelatine or collodion—contains citric or tartaric acid, or both—useful to prevent it turning brown by keeping—which reacts with the sodium thiosulphate, thus giving rise to a rapid sulphuration of the silver.

serious affair. If the photographs could not be kept for a reasonably long period what was the use of photography? Better to return to Daguerreotypy, which gives such beautiful permanent pictures.

Necessarily the cause or causes of fading had to be investigated and means to obtain permanent prints to be found. For that purpose the Photographic Society of London appointed in 1855 a committee "to take into consideration the question of fading of positive photographic pictures," selected among its most prominent members: H. Pollock, T. A. Malone, T. F. Hardwich, George Shadbolt, and others. Davanne and Girard had, on the other hand, already commenced a study of the whole positive process.*

The result of the investigations (and the reader should bear them in mind) was that sulphuration is the cause of fading; that to avoid it:

First.—The proofs should be toned before fixing.†

Second.—Gold and platinum not being alterable in the air should be used for toning.

Third.—The proofs should be fixed in a plain solution of sodium thiosulphate renewed every day.

Fourth.—The greatest care should be bestowed upon eliminating completely and rapidly the sodium thiosulphate from the proofs immediately after fixing.

Fifth.—The proofs should be protected from the action of the air and moisture by wax, varnishes or other means.

That the permanency of silver photographs made in following the above instructions is greatly improved, there is no doubt; the proofs may and should last for a great many years, but as to being absolutely permanent there is no certainty; carbon alone can stand the test of time, as shown by the perfect state of preservation of the old manuscripts. Hence, for the illustration of books, and the reproduction of scientific and artistic subjects, etc., the photographs should be printed in greasy ink by the carbon, phototype or photo-engraving processes.

We have before, in the BULLETIN and other publications, theoretically treated the printing out process on silvered paper, showing by chemical proofs what are the sure results of certain manners of operating. We have also in short articles advised the reader to use no other toning and fixing method than the above described, which for more than thirty years is recommended by the most reliable writers on photography. And, indeed, we never thought of again having to write on "fading." But we were compelled to do it by the numerous complaints lately made to us of the rapid fading of aristotype prints toned according to the directions given by certain manufacturers, and, principally, by the persistence of writers, who should know better, to recommend the one-operation toning-fixing process, and even to discard gold for the lower metals, lead, copper, etc., which are quite useless as toning agents, thus leading the beginners astray.

We shall not again write on this subject. But we hope that the editors of photographic journals and annual books, when admitting in their columns those

* *Bulletin*, French Photo. Soc., 1853 et seq. *Journal*, London Phot. Soc., 1855. *Recherches théoriques et pratiques sur la formation des épreuves photographiques positives* par Davanne et Girard. Paris, 1864, Gauthier-Villars. The book and the "traité des impressions photographiques" of A. Poitevin should be published in the English language. But *quid prodest*? How many photographers are now interested in those matters, however interesting and useful?

† Or, but not so well, in a solution of *sol. d'or* after fixing.

abominable processes, will inform the readers of the inevitable result. No hypo-eliminator will prevent for a long time the fading of sulphureted silver positive photographs. They are useful only when the prints have been properly toned, then fixed and washed.

WITHOUT HIS CAMERA.

BY ADELAIDE SKEEL.

(Continued.)

SUNDAY morning dawned a cloudless and glaring day, and Pollard noticed at breakfast, which he took in company with all the household save Lena, that the Sisters had added to their coat of mail, smoked goggles, and he began wondering how somebody would look in them before he realized that he had no business to think of her at all. Perhaps it was the unusualness of his recent experiences or the strong sea air, certainly he found himself getting rather excited at the thought of a woman whose existence twelve hours before had been all unknown to him. He was rather pleased to be stirred in this way, and walked out of the dining-room with a youthful, sophomoric feeling that his hour had come. Alas and alas, however, the hour and the man, but where was the woman? Disconsolately he walked over the island; stubbornly he refused to attend church with cash girl and orphan, till in dismal mood he threw himself down on a none too soft rock, and wished, for the first time, for his camera. It was a flat, shadowless hour, and soon he was resigned to its loss, but not to that of his Eurydice. Surely there was witchery about a woman who had another lover, who had only spoken a half dozen words to him, and those mostly of reproof, whose antecedents were unknown, and who was plain rather than pretty, who lacked style and all else; but yet he wanted to see her. He was dissatisfied with the idea she had of him—if indeed she had formed any idea at all—and he wanted to make her like him, as he was accustomed to being liked. He knew he could do it, for he had done it before when he had not tried. Why not try? He was nothing extraordinary, just a man; yet people always liked him. It was his last stronghold of egotism; could it be this tall, large woman was to take it from him? These were not his usual camaresque thoughts, he realized; but, when without his camera, why should he not think the normal thoughts of other men? A rustle in the low growing bushes, and suddenly, as on the previous day, he heard the sound of her sobs, and looking about discovered her lying on her face not ten feet from where he had sat thinking of her.

"Oh, come now, I say," he began, "this is too bad, I would not cry so much, indeed I would not." He had spoken without pretense of ceremony, and her indignant surprise checked her tears instantly. She raised her face, all red and disfigured, to beg his pardon, as calmly as if he had met her in some more conventional way.

"I must beg pardon," he answered, "and if you will forgive me, I must tell you that I heard you crying yesterday, and was so sorry I climbed the bank to come to your rescue; but you know the rest." As she remained silent, he ventured to add, knowing, of course, that his guess was wide of the mark, "I do not care a pin for my dory, although the camera had some films I want to

develop, but I shall advertise it, and your lover will not be put in prison, I am sure."

"I have no lover," was the stern answer. She dried her eyes and sat up rigidly.

"No? Well, we are quits then, and I have no dory, not to mention a camera; but I own I had these treasures once. Perhaps you had a lover once, and somebody stole him from you by mistake."

The fair haired woman seemed uncommonly dense, he thought, yet sweet and winsome beyond words. There was a mushroom-like growth in this man's hitherto unsusceptible heart, and he gloated over the words just spoken—"I have no lover." Smiling his irresistible smile, he gathered courage to throw himself down by her side, and say, coaxingly: "If you will tell me what troubles you perhaps I could help you, and to be quite honest, I must tell you I overheard a good deal of what was said yesterday."

Startled into frankness, she answered even more readily than he had expected, "Yes, I will tell you about myself. I come from Lynn, where I am stopping for the summer with my cousins. They are the Misses Scarlet, and you probably know them, because people come from everywhere to see their bric-a-brac collection. Their house is a perfect museum, but I don't appreciate it. It seems to me wrong to have taken all those things out of their proper home and places, and I would like to send them all back—every illuminated missal, altar frontal and carved chair. They picked them up in Europe, and I wish they could go back where they mean something besides dusting."

"Yes, I know the place," he said; "it is a little overcrowded, like St. Paul's in London with its tombs. But go on."

"My own home is broken up," she continued, not noticing his watchful gaze, "all my family are dead, but I cannot live with my cousins. I came down here to think and to decide about something. I wanted to get away from things and to think, but I cannot do it. I love the Sisters, and I have been here for weeks, but—"

"You are not thinking of becoming one," he said, hastily.

"No, indeed," she answered, "that peace is not for me." Her bosom heaved as she spoke and her cheeks grew pink as a young girl's. She seemed, indeed, a lovely woman, and Pollard was in ecstasy as he found himself permitted to look at her with daring thoughts in his heart.

"There is a little more I should like to hear," he said, presently, not wishing to press her with questions, but shrewdly suspecting she would feel relieved to explain her situation of the day previous.

"I came down here to think," she repeated, dreamily, "but I cannot."

"To think about the man who stole my dory and camera?"

"Yes, yes, he could not help taking the boat—he had to get away."

"And I had to stay—"

"I am sorry—"

"And I am glad. But tell me about the man who had to get away because you sent him. Is he an acceptable lover in the eyes of the Misses Scarlet? Does he appreciate bric-a-brac?"

"He is not my lover," she answered, hanging her head; but before Pollard could rejoice, even in secret, she added, "I am afraid he is coming back."

"To-day?"

"Perhaps."

"This morning?"

"I am afraid so."

"In my dory?"

"I don't know."

"You know you don't like him?"

She shook her head.

"Nor love him?"

"Sure, sure, sure."

Pollard Keene was growing very bold, now. There was no better name in the neighborhood than that of Scarlet; it was as good and better than his own, but, doubtless, this poor, perplexed cousin, whose family were all dead, did not realize her local worth. She told him presently that she had passed all her girlhood in California, and after the death of her father, and other great troubles, had returned to Lynn. Keene grew magnanimous in anticipations, offering her in his imagination a thousand luxuries which the cotton brokerage business could ill afford. All the settled plans of his life were changing as he sat silent by her side, till it seemed as if a sea fog must be covering his past from his mind. Other fellows—usually younger than he, to be sure—had told him of this beatific state and had hinted that it did not last; but in his innermost soul he swore constancy to the woman to whom, as yet, he had not spoken a word of love. Surely, he could win her if he tried; and why not try? Why not try hard? Why not succeed? He came back from this dream to hear her saying in answer, perhaps, to something he had said, but he knew not what, as he had lived a lifetime since asking it, "He is coming after me, and he will be sorry he took your dory."

"I will be sorrier if he takes you away from me"—he checked himself, for although the whole matter was settled in his own heart, he must not show an indecent haste; but the words brought no blush to his companion's cheek. Piqued at what seemed like failure, he was beginning to try to talk indifferently of other things when the splashing of two oars below startled both.

"By Jove," he cried, "there is a man with a boat. I say, Miss Scarlet, will you permit me to take you rowing? I promise to get you back in time for lunch or dinner and vespers. Please permit me, Miss Scarlet."

She blushed, this time as red as the twice repeated name, looked puzzled at the using of it, and, then, with a slow, despairing manner, said: "I may as well go as stay—things with me always decide themselves—good bye."

Save for the farewell and the woman's sudden disappearance down the bank, he would have supposed his invitation to have been accepted; but a glance into the water below showed him a dory darting out into the harbor and making for Beverly shores, bearing a passenger whose blue shawl was unmistakable. Evidently the man who was "not her lover" had captured her willy-nilly, leaving a discarded escort shipwrecked a second time on Butcher's Island.

* * * "You had some talk with poor, dear Mrs. Hunt," said the most gossip of the Sisters to Pollard an hour or two later, as he stood at the float waiting for the one Sunday ferry. "Sweet girl, she has had a hard struggle all summer, and we think she did her duty in allowing her husband to come for her to-day. He came on Saturday afternoon, but she would not go unless we positively advised it, and even this morning I almost doubted her resolution.

Her relatives in Lynn have strongly urged her to get a divorce, on the ground of non-support ; but the Church forbids the putting asunder those whom God has joined together. Tom Hunt is an idle boy, but honest and—”

“ Pardon me,” interrupted Keene, who, now he was relieved from the duty of turning state’s evidence against a woman, feared the loquacity of a Sister on so earthly a theme as an elopement between man and wife would cause him to lose the ferry and his temper. Her last words, “ Tom Hunt is an idle boy, but honest,” still rang in his ears, particularly when, on returning to his boathouse late that night, he found a man waiting there with his stolen dory.

“ There is the fare, sir,” he said, handing him a handful of change.

“ Keep it for your trouble,” answered the free-handed cotton broker, adding, “ I do not rent boats without a license; but tell me what the lady said when she gave it to you.” He made sure it was Lena who had given the money, yet even this last guess was wrong.

“ She give me nothing, sir ; it was him ; and she says nothing but just ‘ Oh, Tom ’—I reckon he was her sweetheart.”

Disgusted with himself as never before, Pollard was turning away, when the boatman again hailed him with : “ I say, sir, there was a box in the boat that I was to make sure you had all right.”

“ All right,” reiterated Pollard, but he did not turn back. Some way, life with or without his camera seemed a stale affair at that moment.

PHOTOGRAPHIC CHEMISTRY.

BY R. MELDOLA, F.R.S., *Cantor Lectures at Society of Arts.*

(Continued.)

WITH regard to the first, it must be pointed out that, although we have no positive information of a conclusive character, many views have been advanced, which are more or less worthy of consideration ; and an excellent exercise in the use of scientific judgment might be given to the advanced student, by submitting the current notions respecting the composition of these products, and requesting him to prepare a critical essay embodying his own views. Although no definite conclusion might be arrived at, the exercise cannot fail to be of value as an educational test, not only by compelling the student to refer to original papers, but also as calculated to bring out any originality he may possess in the way of devising new crucial experiments—the highest criterion of competence as a technologist. Respecting the view that these compounds contain metallic silver, the fact that the chloride darkens under nitric acid may be taken as evidence to the contrary.* The discussion of the possibility that sub-haloids are present, will link this part of the subject onto the purely chemical considerations dealt with in the last lecture. The possibility of the colored products containing oxygen, *i. e.*, being of the nature of oxyhaloids, is also worthy of being entertained.† In favor of this view is the analogy of cuprous chloride, which darkens only in media which can supply oxygen, and which, under these circumstances, apparently forms an

* Oswald unhesitatingly affirms, both with respect to the wet collodion and gelatino-bromide emulsion processes, that traces of metallic silver are liberated by the action of light. (*Grundriss der allgemeinen Chemis.*, pp. 210-211.)

† According to a recent research by Dr. A. Richardson (*Journal of the Chemical Society*, vol. lix., p. 573) the chloride darkened under water does not contain oxygen. I learn, however, from Mr. H. B. Baker, of Darkech College, that he has come to an opposite conclusion. His experiments are not yet completed, but he considers that the evidence in favor of the view that the darkened chloride contains oxygen is quite conclusive. He has measured the oxygen absorbed, and the oxygen evolved by the action of chlorine on the darkened product.

oxychloride. In the same sense may be interpreted the distinct sensitizing action of water already referred to. On the other hand, it may be pointed out that the chloride darkens in a high vacuum (*i. e.*, in the presence of mercury vapor), and under liquids such as pure benzine, petroleum and carbon tetrachloride, which contain no oxygen, and which have previously been dried by chemical methods. The question thus assumes the form, whether the nature of the colored products may not vary in different media; whether, in easily halogenized liquids, such as benzine, the reduction might not be analogous to that which occurs in hydrogen; whether, in the other cases, the unsaturated silver haloid residue may not form a colored compound with the organic product; and so forth. It may be pointed out that such questions as these open a wide and interesting field for experimental investigation.

With regard to the second point, the action of the substance associated with the silver haloid, it is legitimate to connect this action with the ordinary chemical processes with which the student has been familiarized. He has been taught that reduction and oxidation are concurrent in ordinary chemical reactions, such as when a silver salt is reduced by a ferrous salt. The principle can now be extended to photo-chemical reactions. With the exception of a few cases of pure dissociation (such as the resolution of gold oxide into metal oxygen under the influence of light), which have no direct bearing on photographic processes, the photo-chemical changes with which the photographic chemist has to concern himself may all be considered from the same point of view as those which have been made use of by way of special illustrations. There is no fundamental difference in principle between the action of light on a mixture of ferric chloride and oxalic acid, or mercuric chloride and ammonium oxalate, and its action on a silver haloid mixed with water, silver nitrate, sodium sulphate, gelatine, or any other organic compound capable of being oxidized or halogenized. The only differences are in the relative velocities of chemical change, and in the circumstance that in the case of such metals as iron and mercury the products are definite and known, while in the case of silver the products are indefinite and unknown. The student will thus be led, without a break, from ordinary chemistry to photo-chemistry, and from the latter to the chemistry of photographic processes. He will now realize that the photographic film is to be looked upon as a system of chemical compounds capable of undergoing atomic rearrangement under the influence of the external energy of light. He will grasp the full meaning of the term "sensitizer," and he will see that the function of the latter is quite as important as that of the silver haloid itself.

From this point the practical study of photographic methods, the preparation of emulsions and films, the uses of collodion and gelatine as vehicles, the action of preservatives and all the technical details of modern processes can be taken up or resumed. Then in natural sequence will follow the consideration of the nature of the photographic image and its connection with the colored products resulting from the prolonged action of light on the silver haloids. At this stage, again, caution is necessary, and dogmatic statements must be avoided. The action of light on the sensitive films in use in photography, including all the films employed for producing pictures in the camera, from the iodized silver plate of Daguerre to the gelatino-bromide plate of modern times, gives rise to no visible product of photo-chemical decomposition. Is it, therefore, legitimate to conclude that the short exposure necessary to give a developable picture produces any photo-chemical decomposition at all? It must be pointed out that there is here another gap in the way of direct proof, but that the indirect evidence is all in favor of there being such a chemical change. Of the nature of the material composing the invisible image we know no more than we do of the composition of the colored products of photo-chemical decomposition, or of the photo-salts. They may be identical or not; but that the image is the result of a true chemical change can be made to appear highly probable to the student by a few well chosen demonstrations. Let us consider the evidence as it stands.

The invisible image is either the product of chemical decomposition or it is not.

If it is not, then some other explanation must be invoked. The only other view is that the energy of light is not at first used up in doing chemical work, but that before true chemical decomposition occurs there is an intermediate stage, during which the energy is engaged in loosening the affinity between the atoms of the halogen and the silver. This would be analogous to Bunsen and Roscoe's "photo-chemical induction." According to this view, we should have to regard the first action of light on the sensitive film as a purely physical action, resulting in the formation of an unstable modification of the silver haloid, more easily reducible than the ordinary modification. It might be thought that such a physical modification would be easily producible by the limited action of light on the pure silver haloid; but, as far as my own experiments have gone, this does not appear to be the case. By exposing pure, dry silver bromide films, obtained by the method already described, for sufficient time to produce a well defined developable image on a photographic plate, no difference in the reducibility of the exposed and unexposed parts could be detected. In fact, the films of the pure haloid are so insensitive that an exposure to bright sunlight of sufficient duration to completely solarize the slowest of modern dry plates showed no difference in reducibility by potassio-ferrous oxalate or alkaline pyrogallol, between the exposed and unexposed portions of the surface. The conclusion to be drawn from these experiments is that in this form the silver haloid cannot be converted into a more easily reducible physical modification by any moderate exposure to light—certainly not by an exposure considerably greater than that necessary to impress an image on a gelatino-bromide plate.

At this point the question of molecular aggregation comes into consideration. Is it not possible that in the iodide film of the old collodion process, or in the gelatino-bromide emulsion, the silver haloid is in a different and more highly sensitive state of molecular aggregation? Is there, in fact, a more unstable condition of the haloid than that resulting from the action of the halogen on a silver mirror on glass? In considering this part of the subject, attention may be called to the experiments which the student has already been recommended to make in connection with the modifications of the haloids. His experience in the preparation and ripening of emulsions will also render good service in enabling him to fairly consider the evidence. It is possible that some weight—how much it is not yet possible to decide—may have to be given to the state of aggregation as a factor in determining the extreme sensitiveness of the photographic film. At the same time it must be pointed out that no experimenter has ever yet succeeded in preparing a film of silver haloid in any state of aggregation free from every suspicion of a sensitizer, and capable of receiving an invisible and developable impression in the same time as an ordinary photographic plate.*

(To be continued.)

* According to Stas, the third (granular) modification of AgBr (both the white and yellow forms) are extremely sensitive to light. He states that on boiling (with water?) in a glass flask they become darkened in 2 or 3 seconds by the blue flame of a Bunsen burner. It is not clear from the description whether he attributes the darkening to the light of the burner alone, but the conditions are obviously very different from those which exist in a photographic film. It would be of interest and importance to reinvestigate this modification of AgBr from the photographic point of view. With reference to the production of an invisible image on a film of AgI on glass, opinions are divided (compare Abney, "Treatise on Photography," fifth edition, p. 25, and Eder, "Handbuch," part ii, p. 21 and seq.). The authority for the statement that such an image can be produced is Carey Lea. In order to submit the question to the test of experiment, I have made, with the co-operation of Mr. T. H. Norris, some further experiments with iodized silver mirrors on glass. The results with alkaline developers are the same as those with the brominated mirrors; there is no difference in reducibility between the exposed and the unexposed portions of the film. With an acid developer, however, a developable image is produced. A plate was half covered by a black screen and the uncovered portion exposed for five minutes to the light of the electric arc. The developer was the ordinary pyrogallol solution with acetic acid as a restrainer and a few drops of AgNO₃ solution. The silver deposit formed on the exposed portion long before the unexposed half was attacked. This confirms Carey Lea's results, and at the same time opens up a very wide question, viz., whether photo-chemical decomposition is necessary for development by accretion as distinguished from development by reduction. It may be that photo-physical change is competent to give an image capable of accretional development. It is known that the silver haloid when crystalline is susceptible of photo-physical change (Schultz-Sellack, *Pogg. Ann.*, vol. 42, p. 407).

OUR LETTER FROM FRANCE.

BY M. LÉON VIDAL, *Editor of Moniteur de la Photographie.*

Photographic Instruction.—Ceramic Gelatine Paper.—Photographic Journals.—Sensitized Papers called “Aristotypes.”—Photographic Exhibitions.—The Photography of the Colors and Photography in Colors.—Photo-chronography.—A Suspension Apparatus to take Pictures on Board Ship.—Orthochromatism.—Photo-typography.—Illustrated Journals by Polychromic Impressions.—Forgeries and Photography.—The Preserving of Sensitized Plates.—Self-flattened Films.

ONE of the great themes which now occupy the attention of persons interested in photography, either scientific or amateurs, is the creation of a theoretical and technical institute of so useful a science as photography, whose applications are so general.

The Booksellers' Circle and the French Photographic Society, having learned that there was going to be a vacant chair at the National Conservatory of Arts and Trades, have requested that it should be devoted to a course on photography. This request has not been favorably listened to, mainly because the budget of the conservatory did not allow for such an expense.

Colonel Laussedat, the director of this great institution, thereupon took upon himself to appeal to the good will of the principal notabilities of the photographic world, and he begged them to give lectures, each one on his own specialty, covering the whole field of theoretical and applied photography. This appeal has been listened to, and twenty persons have already promised their co-operation. A lecture takes place every Sunday, before an audience of from six to eight hundred listeners, upon some subject announced beforehand.

The first lectures delivered, by Mons. Davanne (History and Principal Applications of Photography); by Mons. Demeney (on Chrono-photography); by Mons. Lippmann (on the Photography of the Colors), and by Mons. Janssen (on Astronomical Photography).

The following are expected to be heard in turn, viz.: Messieurs Colson, Paul Henri Cornu, H. Becquerel, Léon Vidal, Ct. Fribourg, Gravier, Balagny, Duchesne, Fabre, Dugnet, Moëssard, etc. Every branch in photography will thus be treated of in turn in a more or less complete fashion, but well enough to make of these lectures, as a whole, a general instruction well nigh complete.

Colonel Laussedat hopes that these lectures, so popular already with the public who go to hear them in enormous crowds, will open the eyes of the government to the deep interest which manifests itself everywhere for photographic instruction.

We doubt, however, if the chair in question be created, and it is likely that the series of arranged lectures for this year will continue on to next year, and even for many years yet, before the necessary means be found toward the foundation of definite instruction on the subject.

It is curious to note how we cannot do in France what is already an accomplished fact in Vienna on so large a scale. By carefully looking for, one might perhaps suppress some sinecures, useful only to their incumbents, and a photographic chair would very soon find itself endowed, and largely so.

Many a time has the idea been tried of making paper with a vitrifiable powder

surface, analogous to the one covered with a gelatinous mixture, for the process called carbon.

Gelatine does not burn unless in a swelled condition, consequently all attempts in this line have failed; but here is now one Mons. Guerot who is exhibiting a new paper thus prepared. He pretends that gelatine is susceptible of a pulverized condition just as collodion is, and in said condition it burns well without altering the image therein formed by the vitrifiable metallic oxides.

Experiments in this direction are now being made, partly under our guidance, and we will publish an account of them in our next letter.

Ceramic photography would thus be placed within the reach of all, and in a more practical way perhaps than by the so-called powder processes. One would obtain with the mixtures vitrifiable images richer in coloring principles, consequently offering greater vigor. As the number of amateur photographers increases, the photographic press multiplies even more so; we thus have this very moment in France a good dozen of photographic papers, the principal ones of which are as follows: *Le Bulletin de la Société Française de Photographie*, *Le Bulletin du Photo Club de Paris*, *Le Bulletin de la Société Photographique du Nord de la France*, *Le Moniteur de la Photographie*, *Le Paris Photographe*, *La Photo-Gazette*, *Le Journal des Sociétés Photographiques des Départements*, *L'Amateur Photographe*, *Le Journal de l'industrie Photographique*, *La Photographie Française*, *Le Progrès Photographique*, *La Revue Photographique*, *L'Heliochromie*, without mentioning the room taken up by the scientific papers on the subject, such as *La Nature*, *La Science illustrée*, *Le Monde de la Science*, *La Science en famille*, etc.

One would think that the numerous votaries of photography would devour all these publications. Well! not much. People don't read so much as it is thought. Photography, except for the few who take the trouble of investigating its wonders, is a kind of sport like bicycling. The "Button Pressers," as they are called in America, find amusement only in taking the pictures, without troubling themselves any further as to the reason why and how it is done. Thus we conclude that perhaps the future of photographic literature has been somewhat discounted. This deluge of publications brings about a greater crumbling of the resources and legitimate profits of the photographic press. But this abnormal condition of things will sooner or later find its natural level.

Are the last days of albumenized paper near at hand? To judge from the success of the new preparation, called aristotype paper, one would think so. Aristotype paper is coming into fashion more and more every day; already large factories are being established and the photographic market will become inundated with it.

We had at first the aristotype paper of Liesegang, which became general on a small scale. We now have the Lamy paper, the chlorocitrate of silver paper of Véra & Martin, the Lumière paper and many others besides, without mentioning another paper somewhat analogous, but on the basis of the collodio-chloride of silver made by the house of Engel-Feitknecht (of Douanne), and also by that of Poulenc Bros., of Paris.

The future will tell what is to be expected of these papers. We are led to believe, unless there is a proof to the contrary, that all preparations having the collodion for a basis will furnish the most durable results under like circumstances.

What is interesting to notice is the fact that France consumes hardly one-third of the albumenized paper made in the country, the other two-thirds being imported from Germany, principally Dresden.

The paper itself is originally made in France, and the yolks of the eggs which are not needed are sent from Germany to France, where they are utilized to make glove skins supple.

Gelatine and collodion papers are growing so in popularity that they will greatly undermine the manufacturing of albumenized paper.

Among the photographic exhibitions which are being organized, there is one that will offer a great deal of interest. It is being organized by the Booksellers' Club, and it will bring together the reproductive processes derived from photography, such as the process of photo-lithography or zinc etching, the photo-engraving process (both the high and bas-reliefs), the photoglyphic and the photo-colographic process, as well as their polychromic applications.

To enable the public to get a better idea of the merits of each process, exhibitors are invited to make the following reproductions, all of the same size, from photographs to be furnished by the club, who will also furnish the paper for the prints, viz.:

| | |
|---|---------------------------|
| 1st. A landscape | size 18 x 24 centimeters. |
| 2d. A portrait | " 13 x 18 " |
| 3d. A statue | " 18 x 24 " |
| 4th. A piece of cloth (to be reproduced in black and in color) | " 18 x 24 " |
| 5th. Some old print | " 18 x 24 " |

The piece of cloth will be forwarded by the club. Here is then an excellent idea; from the efforts which the Booksellers' Club is making in pushing forward by all means the progress of the processes which are derived from photography, one may judge how useful these processes are, and how more and more indispensable they are becoming to the book trade in general.

This exhibition will take place in March of 1892, at the club itself.

On or about the same date will also take place at the Palace of Fine Arts (Champs de Mars) a general photographic exhibition, the idea coming from the syndicate of photo dealers and manufacturers. The object of this exhibition is purely in the interest of business, but we cannot foresee the results of this trial, about which a great deal of noise is being made. I do not think there is ground enough for a show of this kind, the need of which was not even felt on the eve of the Universal Exposition of 1889.

I will touch upon a burning question, of a palpitating interest to judge from all that has been, correctly or incorrectly, talked about it, from the date that Mons. Lippmann revived this then somewhat dormant question, through his remarkable photographic experiments on Fresnel's "Theory of the Interference of Light."

The news of the discovery of the photography of the colors of nature went over the whole world like a flash of lightning. But, when the public, who never understood a word about the real truth of the discovery, saw the impossibility of utilizing the pseudo-discovery for the making of portraits, they fell back from their first enthusiasm, and nobody now refers any more to the matter.

However, at Mons. Lippmann's lecture at the National Conservatory of Arts and Trades, the crowd was immense, and when the discoverer of the process

referred to it in words which could hardly be thoroughly understood by an audience not having a primary knowledge of the principle involved, the public brought the house down with its unanimous applause.

Mons. Lippmann has formally said that for the present there was nothing practical to expect from his discovery, but that he hoped that with the advance in the manufacture of sensitized films the end will be reached of the beginning of which he was the promoter.

The audience became highly interested with his experiments, especially so with the projected image of a series of waves interfering among themselves, and obtained upon a mercurial surface by the aid of a regular stroke from a steel point.

The incident and reflected rays are thus seen perfectly well, and one can give an account of the nodes and ventral segments to which the phenomenon of interference gives rise.

I have given you the serious aspect of the question; now here is the burlesque part of it. A certain Mons. B. is making quite a noise about some pretended invention of his, relating to colors. According to his theory, all negatives become imbued with the colors of the original model or subject, and it only remains to place the negatives against some surface conveniently prepared with the artificial colors, and by exposing to light, the right colors would appear, the negative itself acting the part of an artist.

Is it necessary to say that this gentleman is imposing upon the gullibility of the ignorant, going even so far as to make some easily credulous men of science pause and waste their time upon his theory?

The fact of the matter is that there is some obscure trick about it which he takes advantage of, to pose before the public as one among the most extraordinarily scientific and happy inventors of the age.

He further asserts having invented a means of reading upon the silver print the colors of the original subject, and some of our colleagues seem to have some faith in his assertions. As to myself, the said discovery is absolutely void of foundation until proofs shall be duly established.

Others, by the bye, are exploiting certain known coloring processes in photography, and they make a great mystery about the means they employ. They want the public to believe in something mysterious, when the sole process consists in allowing the light to model the local colors impregnated with chloride of silver.

The public is so sensitive to images in colors that people soon take advantage of its naïveté by publishing assertions about discoveries which are nothing more than vain caprices.

The particular science which has received the name of photo-chronography is that whose principal promoter is Dr. Marey. It has for its object the study of the laws of movement by making photography register at equal and frequent intervals a given subject in full motion. Mons. Marey has replaced the old graphic method, which was formerly in use for the purpose, by the photographic process.

By this means he obtains, in one second of time, from fifty to sixty successive images of the same being in motion. It is easy for him, thanks to this dissolution by such close intervals, to make a close analysis of the movements, to thereby establish a law and to verify by a synthetic process, with the aid of the bioscope, the reality or truths of observed facts.

Mons. Marey has pushed very far this experimental method, since he has succeeded in reproducing an insect in the act of flying, a feat he could not neatly accomplish except by exposing the $\frac{1}{2500}$ of a second for each consecutive image.

Photo-chronography is destined to render numberless services to the arts as well as to the sciences; it is applicable to all kinds of movement, and it will become the means of registering the truth about the proper working of machines, etc., etc.

It can be applied to the analysis of the slowest movements, such, for instance, as the growth of plants, just as well as to the most rapid movements in existence.

Mons. L. Piver, a well known manufacturer, as well as photographic amateur and lover of nautical sports, has devised a suspension apparatus to render manageable on board a vessel any large double bodied camera without the use of a stand.

Thanks to this superior arrangement, the operator has no trouble whatever with his camera; he directs it with the hand with the greatest ease in any convenient direction; he focuses with one of the cameras, and he can loosen the spring of the shutter at the precise moment when his subject is in full view on the ground glass and at the desired size.

This very simple system, though very ingenious, will render great services to marine photographers who take pictures at sea. It has specially for its object not only the suppression of the weight of the apparatus, but also that of the trepidations almost annihilated by the ropes, constituting a kind of isolation with regard to the body of the vessel.

The orthochromatic processes, although much superior to the ordinary ones, are rather slow in becoming popular. It happens to this process what has happened and will happen to many others, no matter how superior they may be, that the public has become accustomed to the ordinary method by long usage, and finds it very hard to accept a new one.

However, I can report some progress in this direction. The house of Lumière, the largest manufacturers of sensitized plates, is now making orthochromatic plates sensitized to yellow as well as to red. Other French houses are going to follow suit without allowing themselves to be hampered by some pseudo-inventor of a special patent, who, under the pretext that he has patented some orthochromatic formula, thinks he has the right to forbid every one to manufacture without his permission. The Lumière house having been threatened with a suit and having nothing to pay for obtaining this permission, he has brought suit against them even when they advertise the fact that they do not make use of eosine or any basic product whatever.

Here is an instance of the deplorable abuse of the rights conferred by a patent. A patent cannot cover but a fact neatly specified, not the idea generalized the way the patentee wants it to.

If orthochromatism thus finds itself behind in France, it is on account of such obstacles in its way; but all this will have an end and there is room to hope that in the near future photographers will understand how preferable it is to use some sensitized coating adaptable for yielding a more complete gamut of the several colors.

The application of photography to art engraving, especially to typographical engraving, is becoming more and more extensive. The house of Bousso

Valadon & Co., under the able management of Mons. Manzi, makes a remarkable use of it not only in typographic impressions in black, but also in polychromic prints as well. To convince one's self of this one has but to examine the fine collection of *Illustrated Figaro*, where all the illustrations are due to the phototypo-engraving process. And what is most surprising is the remarkably low price of this publication, so richly finished, and containing besides such a great number of polychromatic plates and vignettes in colors which are inserted throughout the text.

Other similar publications are frequently edited, and they prove how great are the services which photography is rendering to the book trade.

A criminal case has just been tried where an intelligent use of photography had been made to show the forgery of guarantee punches in the case of jewels falsely punched. Thanks to photography, the counterfeit punches, when very much enlarged and compared with the legitimate punches, immediately revealed the fraud, and all discussion on the subject had to be stopped, as the judges were fully convinced of the fact. In this regard it has been said that the day will come when a projecting lantern will be in use in the courts for similar demonstrations.

Mons. Pricaus has recently written a paper where he states that plates made fourteen years before were found to be in a good state of preservation and sensibility. This may be true for certain emulsions and false in the case of others. Also, it may very much depend according to the place where the plates have been kept, the nature of the climate, etc.

Truly, this is of small consequence as regards duration beyond a certain normal number of years. As to the orthochromatic plates somebody has said, who of course can prove everything he says, that such plates improve by age, wine fashion; we do not ask for so much, though we should be satisfied to see these plates not to spoil faster than the ordinary ones.

It is pretended that cyanine, being a substance very little stable, orthochromatic plates prepared with this chemical will not keep for a long time their special property of sensibility to red. We have just made an experiment with plates thus prepared by the house of Lumière eight months ago, and we find that so far they do not seem to have suffered any deterioration whatever. It is interesting to record this fact, and it now remains how long will they last thus.

People are now busy inventing some apparatus for the self-flattened films of the house of Planchon & Co. These are films delivered flattened against very thin steel frames of seven-tenths of one millimeter in thickness. Consequently, one hundred films occupy but a space of 7 centimeters in thickness, which is considered as the minimum space such a great number of sensitized films can ever be put into.

One can thus understand how people are now led to invent special apparatuses to profit by such an advantage of having these films.

By combining aluminium—whose lightness is so great—with such films, some one will succeed in making an apparatus whose portability shall be wonderful.

PARIS, December, 1891.

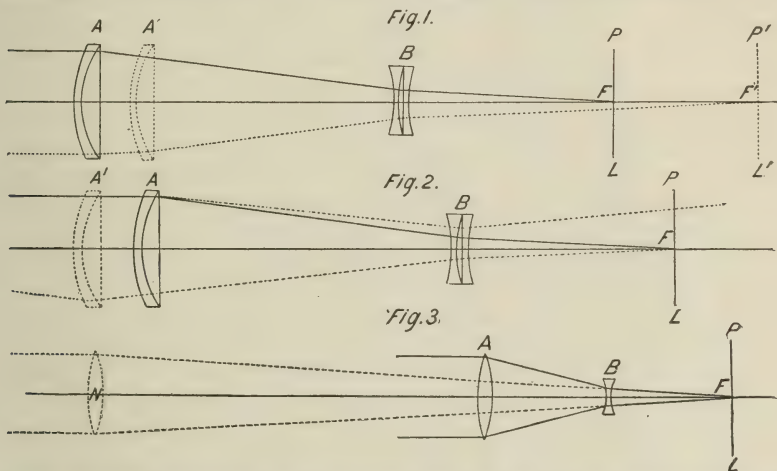
THE jockey manages to live luxuriantly on back pay.

When you size a person up always make liberal allowance for both shrinkage and expansion.

[From the Optician.]

A TELEPHOTOGRAPHIC LENS.

MR. THOS. R. DALLMEYER read a very interesting paper on this, his latest and most important invention, before the members of the Camera Club on Thursday, December 10th last. In the course of his observations he stated that the object he had in view in the construction of this lens, was the production of large primary images of sufficient brilliancy to be of practical value in instantaneous photography without the necessity of employing cumbersome apparatus. Hitherto, he stated, the only two methods by which the production of large images was made possible were long-focus positive ordinary lenses, and the production of the primary image by a positive lens and placing a secondary magnifier behind the plane of the primary image. The objection to the first named method is, Mr. Dallmeyer stated, its unwieldiness, and the second is rendered useless for photographic work, owing to the great loss of light occasioned. The new lens was described as being composed of two elements and the image given by it as primary and inverted. The anterior element is a positive lens of large aperture and short focus, the posterior lens is a negative element of a fractional portion of the focal length of the anterior positive; and in estimating the rapidity or intensity, the shorter the focus of the posterior lens as compared with that of the anterior lens, the greater is the size of image for a given extension of camera.



- Fig. 1. The upper black ray meets the lens A parallel to the axis and by a proper adjustment between A and B comes to focus at F upon the plate P L. If P L be removed further from the lens B to take the positions, P' L', the lens A will have to be moved slightly nearer to B and take the position A'. The lower dotted line represents a parallel ray falling upon A' which passes through the negative lens B, and coming to focus upon the new position of the plate P' L'.
- Fig. 2. On the upper side of the axis a parallel ray to A finds its focus as in the dark line on the plate at F. If, however, some ray from a near object falls upon the lens A in the direction of the dotted line, after passing through the lens B is found divergent and no positive focus is obtainable. In the lower half of the figure, however, A is presumed to take a proper position A' when the ray from the near object passing through A' and also through the negative lens B finds its focus upon the plate in the fixed position chosen.
- Fig. 3. Represents a beam of rays passing through the two component elements A and B, coming to focus upon the plate P L. To estimate the rapidity, it is necessary to consider the full aperture placed at the principal focal plane passing through the nodal point at N. A is thus made to take up an imaginary position. The position of the nodal changes for different positions of the plate P L.

The main object of the invention has been to throw the nodal point from which the focus is actually measured to any desired distance into space in front of the lens itself, thus attaining a large image without the aid of a bulky apparatus. The diagrams given above were projected upon a screen by means of the lantern and Mr. Dallmeyer stated that if the lens B were placed at proper distances from the positive lens A the rays could be made to emerge parallel, divergent, or convergent. For the purpose of

forming an image for any given position of the focusing screen they must be made convergent, producing a direct primary inverted image. It was, Mr. Dallmeyer stated, immaterial what position might be chosen for the plane upon which the image is to be received, it might be either in close proximity to the posterior lens or removed to any distance whatever farther away. It is essential, however, for correct focusing that the exact distance between the two elements be given. It is evident that the larger the focus of the positive elements in the construction, the greater would have to be the separation between the two elements for near or distant planes. There is thus no limit to the size of the image that can be obtained, slight adjustment in the separation of the two elements producing the correct focus upon the screen—be it near or distant from the lens itself—but it must be borne in mind that the greater the separation between the focusing screen and the lens, the less is the rapidity of the combination.

The question of rapidity was, the lecturer stated, easily determinable, and as an instance, an object was supposed to be focused with an ordinary lens of 12 inches equivalent focus and the same object focused at the same distance by the new lens with the same extension of camera. If the image formed by the latter was found to be five times the size of the former, the nodal point might be considered to be at a distance of 60 inches from the focusing screen, and if the front combination happened to be 3 inches in diameter, the intensity ratio would be $\frac{1}{25}$. Mr. Dallmeyer convinced his audience that there was practically no limit by an unlimited extension of camera to the amplification of image, though of course the angle included would be decreased with each increase of amplification. Mr. Dallmeyer stated that the optical finish given to the lenses of the new instrument required to be as fine as that bestowed upon astronomical telescope object glasses, for the greater the size of the object chosen, the greater the exaggeration of slight optical defects. The suggestion that might present itself to many, to employ ordinary uncorrected concave spectacle lenses, would, if carried out, result in disappointment. But he was engaged in the construction of a series of corrected negative elements capable of being employed with portrait lenses of his own manufacture. Mr. Dallmeyer during the course of his lecture showed some remarkable specimens of work done by the lens—one of the moon showing the mountains distinctly, and others of sheep and horses. One deserving of special mention was the comparison of the size of the images produced by an ordinary rectilinear lens of 20 inches focus and another with a new lens of about the same bulk showed the object over five times in size, in other words equal to the performance of a lens of 100 inches in focal length.

In the course of some slight discussion that followed the reading of the paper Mr. J. Traill Taylor expressed himself gratified that one of our opticians had at length taken up the construction of such an instrument. Mr. Taylor at the same time claimed for himself the credit of having advocated the principle some eighteen years ago, but could not find a single manufacturing optician to carry it out.

Mr. A. E. Hayman suggested that the principle of this lens might well be applied to the telescope, especially the binocular form, and to the microscope objective, the advantage of the construction for the latter making it possible to make observations at a greater distance between lens and object than is now possible for higher powers. Mr. Hayman also suggested that it would be interesting if Mr. Dallmeyer would give the members present some idea as to what had led to the invention of this lens, whether accident or design.

Mr. Dallmeyer in replying stated that this was the first occasion he had heard the claims of Mr. Traill Taylor put forward, and instanced it as a remarkable fact that when he (Mr. Dallmeyer) first showed and described the instrument to Mr. Taylor, that gentleman expressed himself delighted and surprised at the invention.

In replying to Mr. Hayman, Mr. Dallmeyer thanked him for his suggestion and with regard to the binocular telescope, the suggestion was useful and valuable; but at present the great difficulty one had to contend with in the ordinary binocular was the

smallness of the field when high powers were employed, so that although it was possible by adding a second negative element removed to a convenient position from the first to attain very much higher power, the field would thereby become very small. Mr. Dallmeyer had considered the adaptation of the principle to the microscope, and although the thoughtful suggestion Mr. Hayman had made could be employed, he must remember that by its introduction the power also of the objective would be reduced. Mr. Hayman had asked how the construction of the instrument had been brought about; Mr. Dallmeyer was glad of the opportunity of referring to this: In a recent holiday spent with his friend, Dr. Emerson, whose attention was now being considerably devoted to the study of natural history, that gentleman had asked Mr. Dallmeyer to try and fix up for him a large object glass of some 6 or 8 feet focus, corrected for photographic purposes, mounted in something very light such as bamboo, and carrying the sensitive plate at the eye end. As a matter of fact Mr. Dallmeyer had tried to get such a bamboo, but had failed, and he thereupon devoted his attention to some means whereby a direct enlarged image could be obtained, which resulted in the construction he had presented to them that evening.

[From the *British Journal of Photography*.]

COPYING BOOK ILLUSTRATIONS AND OTHER SIMILAR SUBJECTS BY MEANS OF ARTIFICIAL LIGHT.

VI.

BY T. N. ARMSTRONG.

ALTHOUGH, undoubtedly, the most important part in the operation of photographing such subjects as china, silver plate, glass vessels, coins, etc., etc., is the employment of a proper method of lighting the objects—for owing to the great dissimilarity in the shapes of such articles, hardly any two objects being alike, fail to be treated in precisely the same manner—still of almost equal importance is the preparation or preliminary treatment of many of such articles preparatory to their being copied; and here we have a very wide field for the operator to exercise his ingenuity in.

In the case of such articles as glass jugs, tumblers or decanters, where the main object is not only to show off the beauty of shape, but likewise to depict in many instances the exquisite designs cut upon their surfaces, it stands to reason that were any one to proceed and merely photograph the same straight away, without having recourse to some method of preventing the designs on the further planes of the glass articles from interfering with that on the immediate side next the lens, nothing but a confusion of the various designs would ensue by the one overlapping or interfering with the other; hence one of the first steps to be taken is to so arrange the vessel as to prevent this. And in cases where the shape of the article is such as to permit of its being filled with a liquid, perhaps there is no better plan than that of filling it up with some semi-opaque liquid, which acts virtually as a backing or background to sides of the vessel. In the selection of such liquids a proper discrimination should be shown in the choice only of such liquids as are in keeping with the nature and shape of the various articles being photographed. It will require but little thought for an intelligent worker to understand that what would be suitable in the case of such an article as a cream jug, would be quite out of place in the case of a wine decanter, hence the necessity of selecting only such liquids as are in keeping with the articles being copied. There are, however, numerous fluids to choose from. Skim milk, in some cases, comes in very handy, so also do claret, port and sherry wine in others, and an intelligent worker will, doubtless, be able to think of many more quite as suitable, such as beer and stout.

When following out this plan, it will be found that more natural results are secured when the vessels are not filled right up to the top.

So much for glass vessels. Now let me refer to the copying of silver cups and

plate. In this class of work the main thing to overcome are the bright reflections for the burnished portions of the objects. Some writers advocate the use of ice when such is practicable, others recommend that the burnished parts receive an application of putty to deaden the surface and prevent the objectionable flare spots. I have used both these expedients with success, but latterly have discarded the use of them for a much simpler method. Simpler because it does not necessitate any tampering with the objects being copied, and, in cases where such are of a very delicate order, this becomes an important item, for with putty there is always a fear of damaging the surfaces.

The plan I adopt is merely to keep breathing on the object. This requires to be renewed after every few seconds during or at intervals in the exposure, but the cap of the lens can be easily put on and off to permit of the breathing being applied.

With some commercial firms, when any important object is being manufactured and it is desired to have the same photographed, it is generally arranged for such being accomplished previously to the burnishing of the parts. This is a great advantage, but, of course, is not feasible in the great majority of cases.

When developing silver objects, the amount of pyro used should be very small, and the exposure given a very full one, and I have always got the best results on a dark background.

Medals and coins require some consideration in the selection of suitable backgrounds also, and the mode of their being held *in situ*. My best results with bronze medals and coins are got by using as a background a sheet of opal glass, and by placing the medals right on the surface with the aid of a very thick solution of powdered gum almost to a jelly. Silver medals are best fixed up in the same way against a sheet of ordinary plain glass, while at some distance behind is placed a black velvet background. Gold medals and coins are best on opal, because they get more relief. China plates, and such like, are best relieved by black velvet placed at a distance.

So much for the necessary arrangements as to suitable backgrounds. When the best results are to be obtained attention must be given to this point.

In lighting, there are also numerous points to be considered, and here, at the outset, the first thing to be thought of is the shape of the object being photographed. When using artificial light, such as I have described in the previous articles, I know of no better place for an amateur, or professional either for that matter, to use than his long dining-room table placed under his gasalier. From such he may with convenience lead the gas to his argand burners on their pedestals on the table by means of the rubber tubing, and when it is deemed expedient to throw in as much top light as possible, the gasalier, when fully lit, will render good help in this respect. Some objects are best lit by reflected light alone. In my practice I use my own invention, which is a plaster of paris chamber when copying some classes of subjects, but a very good and simple makeshift can be rigged up by any one without any great cost. Say it is desired to copy a china plate so as to show off the design. Now here we have just a case in point that is best done by reflected light. This I would put into my chamber, and so arrange matters that the lights are not in front of the object, but that the strong, bottled up light brilliantly surrounded it.

A similar mode of lighting can be arranged for by merely cutting out a center in a large mounting board. This aperture should only be large enough to permit of the lens viewing the plate through. The china plate is then placed in position, and the two argand lamps, one at each side, but not in front, so as to throw only reflected light from the white cardboard on it. In very many cases, when photographing by artificial light, it will be found that this intervening screen, placed so as to reflect light only on the object, will give much better results than by throwing the light directly from the gas-lamps in front. One great advantage is that reflections are not nearly so liable to arise, and if the brass fittings of the camera and lens are covered up with a black cloth, there should be no reflections at all to contend with.

OUR ILLUSTRATION.

THE charming study in posing with which we illustrate this issue of the BULLETIN is from the studio of Mr. A. D. McIntyre, of Putnam, Conn. It is among the best of the many artistic studies that we have had the pleasure of reproducing for some time. The management of the light and the well arranged grace of the figure show the touch of a master hand. There is also a crispness about the negative work that tells of careful management in the development, as well as a keen eye at the focusing screen. Altogether the picture is one that any photographer might well feel proud of.

THE BULLETIN—ITS WORK IN 1891—ITS PLANS FOR 1892.

DURING the past year we have aimed to make the BULLETIN an accurate record of the photographic progress of the world. As may be seen by an examination of its well filled pages, every event of importance has received attention, often the first published in America. It is perhaps difficult to see how we could have done more; yet we have determined that the journal shall continue to deserve its well earned reputation as "the leading photographic magazine of America."

In future the editors will, in addition to their present resources, have a further number of regular contributors on the paid staff of the BULLETIN. Among these we intend to include the following well known writers on photographic subjects, whose articles, written exclusively for this journal, will be eagerly looked for by all professional and amateur photographers:

Mr. H. P. Robinson, of Tunbridge Wells, England;
 Dr. F. Stolze, of Berlin, Germany;
 Professor C. H. Bothamley, of England;
 Dr. J. Gaedicke, of Berlin;
 Professor Alexander Lainer, of the Imperial Institute, Vienna;
 The Rev. F. C. Lambert, of England;
 Captain Eugene Himly, of Berlin;
 Mr. G. H. Coughton, of Rochester, N. Y.;
 Dr. Ellerslie Wallace, Jr., of Philadelphia;
 Mr. H. Harrison Suplee, of Philadelphia.

It will be seen from the above list of names that we shall endeavor to keep our many readers well posted upon all the various phases of photographic work, and that we are sparing no expense that will conduce to this end. The contributions from the above writers will embrace practical topics from the best known practical workers; art topics from artists; scientific discussions, and articles that will interest the amateur as well as the professional photographer.

In addition to the above we have yet another surprise for our readers. For some time past we have had regular correspondents both in Germany and England who have supplied us with special letters upon current topics in those countries. We have now succeeded in arranging for a similar special "Letter from France," giving the latest news in both France and Belgium, and take great pleasure in announcing that M. LÉON VIDAL, editor of the *Moniteur de la Photographie* of Paris, will be our special correspondent.

When we look over the work of the BULLETIN for the past year, and note the contributions of Dr. H. W. Vogel, "Talbot Archer," Dr. J. J. Acworth, Professor W. K. Burton and many others, together with the articles from the editors and their staff, the reports of societies, the answers to correspondents, and when we further contemplate the prospectus for the coming year, which will include all these and much more as above stated, we are inclined to ask: What else can we do to make the BULLETIN useful to its many readers?

If you believe in the BULLETIN and its work, tell of it to your neighbor and friend, and get him to send his name for our subscription list before the new year begins, that he may not miss any of the good things it is sure to contain in every number.

THE PUBLISHERS.

ANTHONY'S Photographic Bulletin.

EDITED BY

Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by **ARTHUR H. ELLIOTT, Ph.D., F.C.S.,**
and a corps of practical assistants.

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E. & H. T. ANTHONY & CO., Publishers.

THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

A STATED meeting was held Wednesday evening, December 9, 1891, the *President*, JOHN C. BULLOCK, in the chair.

The Board of Directors made their monthly report, stating that the work on the improvements in the new quarters was progressing favorably. With a view to supplementing the subscriptions made by the members, they recommended the appointment of a special committee of the Society, to act in conjunction with the committees on meetings and lantern slides, in arranging for a series of three or more public entertainments to be given during the present season for the benefit of the house fund.

They further recommended that a special committee be appointed to arrange for a suitable reception on the occasion of the completion of the work in the new quarters of the Society.

At the conversational meeting, November 25th, a collection of interchange slides from the Lantern Society of London, England, was shown. They were a remarkably fine set, and certainly one of the best collections ever sent to the Society in this manner.

The amendment to the by-laws offered at the last stated meeting, making the annual dues of active members ten dollars, was taken up for action, and after considerable discussion was passed by a large majority.

Mr. Cheyney called the attention of members to an interesting book which he had come across, published in Philadelphia in 1853. It was entitled "Plain Directions for Obtaining Photographic Pictures by the Calotype and Energiatype, etc.;" also Practical Hints on the Daguerreotype," by J. H. Croucher.

He read various extracts from the book, which were interesting as contrasting some of the old-time photographic processes with those of the present day. Peculiar interest, however, was attached to one of the extracts on "daguerreotype panoramique," on account of recent threats said to have been made by Mons. Moessard to prosecute certain Americans for an alleged violation of his patents.

The extract read as follows :

DAGUERREOTYPE PANORAMIQUE.

" This apparatus is constructed to admit of a view of considerable length and of extreme nicety of delineation, being taken with a lens of moderate diameter. The lens is made to have a horizontal movement, which brings it to bear successively upon every part of the horizon within 150 degrees. Having been fixed so that the vertical lines of the object are perpendicular with a line drawn through the ground glass on which the focus is taken, the prepared plate is placed in a *flexible frame* and retained in a certain curve by stops fixed to the frame. The lens is now turned to the extreme limit of the view to be taken, and then gradually and smoothly moved onward by a rack-work attached to the camera till it reaches the other extremity, waiting a longer or shorter time at each point as the object is more or less illuminated. The plates are prepared and fixed in the ordinary way. The use of this instrument is difficult, however, and requires considerable practice to produce good pictures."

A large collection of hand cameras was shown before the society, and their various peculiarities explained and discussed. Among them were the following: Anthony's Magazine Camera, the Sunol, the Kamaret, the Hawkeye, the Premier, a folding Kodak, converted to use cut films in double holders, a Scovill Detective, a Henry Clay with long focus extension base-board, a Henry Clay Stereoscope, a Beck Stereoscope, a Swinden & Earp Magazine, a magazine camera by the Stereoscopic Company, of London, England, also one made by Turnbull, of Edinburgh.

Mr. Carbutt stated that in view of the increase in stereoscopic work it might be well to mention that a very simple way of making transparencies for the stereoscope consisted in the use of cut films with a mat back. To obtain a perfect stereoscopic effect the negative has to be bisected and the views changed around. If the negative was taken on a film it could readily be cut with a square and knife so that they would come together perfectly. Where glass plates were used they had to be

cut with a diamond, thereby running the risk of a rough edge. At the next meeting he intended to show some very good results in transparencies of the kind referred to.

Dr. Mitchell asked whether any of the members had tried the new developer, "para-amidophenol." He expected to show a few lantern slides at the next meeting made by this developer, which was claimed to be the coming developer. So far it was extremely expensive, the wholesale price being about thirty-five cents per drachm; but it was very powerful, and worked quickly and strongly in a very dilute solution, about one part to two thousand. It was particularly excellent for bromide paper, giving much better whites than could be obtained with oxalate.

Mr. Stirling exhibited the Prosch lamp for pure magnesium powder, which seemed to be one of the best of its kind. He also exhibited a print made by the Kallitype process.

Adjourned.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. Correspondents will please remember this. No attention will be paid to anonymous communications.

Q.—F. P. T. writes: Will you kindly tell me how I can make sodium ferric oxalate? By so doing you will greatly oblige.

A.—A good way is as follows:

Take

| | |
|---------------------------|-----------|
| Oxalic acid..... | 76 parts. |
| Sodium carbonate (dry)... | 32 " |
| Water..... | 800 " |

Dissolve the oxalic acid in the water, and add slowly, with stirring, the sodium carbonate; bring this solution to a boil to expel the carbonic acid and saturate it with freshly precipitated iron hydrate prepared in the following manner:

| | |
|------------------------|-----------|
| Ammonia iron alum..... | 96 parts. |
| Water..... | 600 " |

Then add strong ammonia to alkaline reaction (solution turns litmus paper blue), let settle and wash thoroughly by decantation with hot water till the washings added to barium chloride solution and one drop pure muriatic acid give no white cloudiness. Dissolve this precipitate in the oxalic acid and sodium carbonate solution. Evaporate and crystallize.

Q.—J. A. F. writes: In your issue of December 12th I notice a beautiful photo from the studio of Dana, New York, called "Ivoryette," printed on N. P. A. albumen paper. Will you kindly inform me what an ivoryette is? I have been using Aristo paper for some

time past and supposed ivoryettes were a new kind of paper, but now judge it must be a process of preparing albumen paper. Any information will be gladly received.

A.—A so-called "Ivoryette" print is not one made on a certain kind of albumen paper, as you suppose, but is a name given to an effect produced by a particular kind of lighting and background, and may be made on any heavily albumened paper. By referring to the print you mention you will see that the background employed is partly transparent and white, or nearly so, and the lighting chiefly from the top. By a little experimentation and comparison of the results obtained with your model you will soon acquire the knack. Care should be taken not to overtone your prints.

Q.—R. S. R. writes: In fitting up our new quarters, we had intended to introduce an arc electric light for use in making bromide enlargements and lantern slides. We find, however, that the cost is going to be very high. Can you give us any advice as to other forms of light suitable for these purposes? Do you know of any satisfactory system of storage batteries which might be available? We shall be very glad, at your convenience, to receive any points you can suggest to aid us in the matter.

A.—We know of no storage battery which we think will prove thoroughly satisfactory for your use. We would suggest that you write to Dr. L. H. Laudy, School of Mines, Columbia College, New York City, regarding the installation of your electric light and the kind best adapted to your use.

Q.—W. E. M. writes: Will you please tell me through "What Our Friends Would Like to Know" full directions for making transparencies for lantern slides. Also how to make the so-called spirit pictures.

A.—You will find your first question answered in the issue of the BULLETIN dated December 26, 1891, pages 766 and 767. As to the so called spirit pictures, it is possible to produce them in several ways; a good one is as follows: Give a much undertimed preliminary exposure to the desired ghost figure; without changing camera focus or background, introduce such features as you wish to be prominent in the finished picture, and give full timed exposure. Care should be taken to have proper contrast between drapery of ghost figure and main subject—one dark, the other light. The developing and printing should be the same as given to an ordinary negative. Mark each figure on

ground glass, so they do not obliterate one another.

Q.—C. E. A. writes: Will you please answer this question in your next BULLETIN: What is the reason that photographers in the country get such poor albumen paper?

A.—Perhaps the kind of paper they use is not reliable. It is always better to order the brand of some manufacturer who has an established good reputation to maintain, even though it be somewhat higher in price. If you will send us some of the paper complained of and some finished prints made on it, we will be able to more intelligently answer your question.

Q.—H. H. S. writes: In the *Phar. Era* we saw a formula for H. P. Robinson's developer. No. 2 reads:

Bromide pot 120 grains.
Ammonia, 880..... 1 ounce.
Water..... 7 ounces.

We asked the *Era* what kind of ammonia was meant; he kindly referred us to you for information; will you please give us the desired information?

A.—In the above formula the ammonia referred to is the strongest commercial grade. It is not necessary, however, that it be of exactly this strength. A solution containing from 30 to 35 per cent. of ammonia will in this case answer every purpose.

Views Caught with the Drop Shutter.

THE ingenuity of rascality seems to be little short of infinite. A "bogus" agent giving the name of Carter has victimized a number

of people by selling them fraudulent contracts for pictures at far less than regular rates. The contract is of the usual form, and upon payment to the agent of twenty-five cents and a further payment at the gallery of the same amount the bearer is entitled to twelve satin finished gem photos and one satin finished imperial, which will be given free as a sample, etc. The blanks in the printed matter have been filled in with a rubber stamp bearing the name of C. Rossbach, 41 Montgomery Street, Jersey City. This gentleman has been troubled by an excess of would-be customers wishing to purchase pictures at the above ruinous price. It is probable that the same card will be used with other well known names stenciled on the back, and it would be well for the next person receiving a visit from one of this class of agents to call in the aid of the police.

THEO. SCHUMANN, of Atlanta, Ga., writes us as follows: "It affords me pleasure to inform you that I have disposed of my drug business this day, December 31st, and shall hereafter devote my exclusive attention to the photographic business and the manufacture of photographic chemicals."

GEORGE FRANCIS SCHREIBER, who for fifty years was a prominent photographer of Philadelphia, and well known throughout the United States as a photographer of fine cattle and noted horses, died Sunday at his residence in that city from an attack of bronchitis, the outcome of an attack of the grip, aged eighty-eight years.—*New York Herald*, January 5, 1892.

TABLE OF CONTENTS.

| | PAGE | | PAGE |
|--------------------------------------|------|--|------|
| A TELEPHOTOGRAPHIC LENS | 25 | PHOTOGRAPHIC CHEMISTRY (<i>continued</i>), | |
| COPIING BOOK ILLUSTRATIONS AND | | by R. Meldola, F.R.S..... | 16 |
| OTHER SIMILAR SUBJECTS BY MEANS | | THE BULLETIN—ITS WORK IN 1891— | |
| OF AETHERIAL LIGHT. VI, by Z. N. | | ITS PLANS FOR 1892..... | 29 |
| Armstrong..... | 27 | THE HARVEST OF NINETY-ONE..... | 1 |
| EDITORIAL NOTES..... | 3 | THE PHOTOGRAPHIC SOCIETY OF PHILA- | |
| ENGLISH NOTES, by Talbot Archer..... | 7 | DELPHIA..... | 30 |
| ON THE FADING OF POSITIVE PHOTO- | | VIEWS CAUGHT WITH THE DROP | |
| GRAPHS, P. C. Duchochoy..... | 10 | SHUTTER..... | 32 |
| ONE ILLUSTRATION..... | 29 | WHAT OUR FRIENDS WOULD LIKE TO | |
| ONE LETTER FROM FRANCE, by M. Léon | | KNOW..... | 31 |
| Idol..... | 19 | WITHOUT HIS CAMERA, by Adelaide | |
| | | Sked..... | 13 |



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ANTHONY'S

Photographic Bulletin.

EDITORS :

PROF. CHARLES F. CHANDLER, PH.D., LL.D.

PROF. ARTHUR H. ELLIOTT, PH.D., F.C.S.

VOL. XXIII.

JANUARY 23, 1892.

No. 2.

SIMPLE EMULSION MAKING.

WE are often asked to give some simple directions for the making of gelatine emulsion, and as the process has been given in an improved form by Mr. A. L. Henderson before one of the London societies, we shall briefly give his methods and the way we would apply them on this side of the Atlantic.

In the first place, pure distilled water is the first requisite. The ordinary water of our houses contains many compounds that interfere with the success of the emulsion when made by the method given by Mr. Henderson. The gelatine employed should also be of good quality, and, particularly, be free from sulphurous acid, which it sometimes contains.

The following materials in addition to pure water are necessary for making 15 ounces of emulsion :

| | |
|--------------------------|-------------|
| Silver nitrate..... | 120 grains. |
| Water | 3 ounces. |
| Potassium carbonate..... | 90 grains. |
| Water..... | 3 ounces. |
| Gelatine | 240 grains. |
| Potassium bromide..... | 90 “ |
| Potassium iodide..... | 1 grain. |

The first step is the conversion of the silver nitrate into silver carbonate by means of the potassium carbonate. This operation may be conducted in a weak light, such as gas or lamp light, and is best performed in what the chemist calls a precipitating glass ; but a clean glass pickle bottle will answer the purpose if it is surely clean and free from organic matter. A thorough soaking in hot soda lye will clean such a bottle sufficiently, with a good rinsing afterward. The glass cans used for preserving fruit in may also be used for this purpose. Having dissolved the silver nitrate in its three ounces of water, and also the potassium carbonate in its water, also three ounces, pour slowly the last solution

into the first, stirring well all the time, and after you have added about two-thirds of the potassium carbonate solution allow the silver carbonate formed to settle. After the fluid over the silver carbonate appears clear carefully drop into it some more of the potassium carbonate solution and note if any more silver carbonate is precipitated. If no change takes place in the fluid the precipitation is complete and the balance of the potassium carbonate solution can be put on one side for future use. If, on the other hand, more silver carbonate is formed on adding more potassium carbonate, stir the fluid and add the potassium carbonate in small quantities at a time (say twenty or thirty drops), until on allowing the precipitate to settle from time to time the fluid above it shows no change on adding a few drops more of the potassium carbonate solution. Having completely precipitated the silver as carbonate, allow it to settle and carefully pour off the fluid above it, at the same time being careful not to pour off any of the silver carbonate with it.

In another vessel (another clean, wide mouthed pickle bottle will do) cover the gelatine with water, and stand it in hot water to make it swell and soften. Be careful to heat the bottle slowly at first or it will break, and heating is not necessary if the gelatine is allowed to soak some time in cold water; but heat saves time when you are in a hurry.

The mixing of the gelatine and silver carbonate must be done in the dark-room, and some means must be provided for digesting the emulsion at 80 or 90 degrees for several hours. For the latter purpose a small wash boiler, as used in the kitchen, and that holds at least a gallon of water, will answer. Around this boiler tie tightly about 2 inches in thickness of some woolen material, such as old flannel or cloth; old blanketing answers very well. Also have a pad of the same material for the boiler to stand on and a cover of the same character, both of which are at least 2 inches thick. In the boiler, and by means of string around the neck of one of the wide mouth bottles, this latter is suspended in such a manner that it will hang partly immersed in water when the boiler is two-thirds full of water. A piece of copper wire around the outside of the boiler and close under the rim serves to attach the string to when the lid of the boiler is closed.

Into the suspended bottle place the silver carbonate and the gelatine that has been softened, add water of 90 degrees to the boiler to nearly but not quite float the suspended bottle containing the mixture, and wait until the gelatine has completely liquefied. Now stir the mixture well until the gelatine and silver carbonate form a milky emulsion free from grains. The solid potassium bromide is now added, and the stirring is continued until the salt is dissolved and a perfectly uniform emulsion is obtained. At this point take out the bottle of emulsion, quickly cover it with a dark cloth, pour out the water in the boiler and add a fresh lot of water of 90 degrees Fahr. Suspend the bottle of emulsion in this water, add the potassium iodide, stir well, put on the cover of the boiler, and also its woolen roof. In this way you may leave the emulsion many hours without the temperature falling more than 10 or 15 degrees. But the success of this method of digestion depends upon the care with which the woolen case of the boiler is made to fit closely on all sides.

Several hours' digestion, Mr. Henderson says, will give an emulsion of sixteen on the sensitometer, and by adding to the washed emulsion when finished a solution of 2 grains of potassium nitrate, 1 grain of potassium bromide and half

a grain of chrome alum to 15 ounces of emulsion and continuing the digestion for twenty-four hours, an emulsion of twenty-four or over would be obtained.

When the time of digestion is thought to be sufficient for the purpose for which the emulsion is desired, throw out the warm water from the boiler, add cold water and allow the emulsion to remain in it until completely set to a jelly. The lid of the boiler should be replaced and great care taken that only the dimmest red light is used in the darkroom during all these operations.

After the emulsion has set scrape it out of the bottle with a silver fork into a clean piece of muslin, taking care to break it up as much as possible into small shreds. Now tie up the muslin into a bag and suspend the latter in the boiler with enough clean distilled water to cover it. Allow it to remain in this water for several hours, then replace the water with some fresh, rubbing the emulsion between the hands from time to time in order to facilitate the washing out of the salts from the emulsion with the least quantity of water. This operation of washing and squeezing must be continued until the water that drains from the emulsion will not give a cloudy precipitate when tested with a solution of silver nitrate.

If the washed emulsion has increased much in bulk while in the muslin bag, squeeze it as much as possible and allow it to drain in the empty boiler for some hours, with an occasional squeeze. Alcohol may also be used to get rid of the extra water absorbed by the emulsion. By covering it with alcohol it soon decreases in bulk, and a couple of washes in water leave it in a condition to be melted and coated on the plates.

If, in coating the plates, the emulsion does not flow readily, the addition of 5 per cent. of its volume of alcohol will overcome the trouble. In the case where alcohol has been used to reduce the volume of the washed emulsion this addition of alcohol may not be necessary.

The above methods are those we should follow if we were to make Mr. Henderson's emulsion. For some of the steps we are indebted to the *British Journal of Photography*, where this process was discussed some months ago. But the balance of the methods are the result of our own experiences. Those of our readers who feel like trying their hand at emulsion making will find this process quite easy to manage, although it is somewhat tedious.

EDITORIAL NOTES.

At a recent meeting of the New York Academy of Sciences, a dispatch was received from Prof. Ritchie, of Boston, announcing that photography has been the means of the discovery of a new planet by the Heidelberg astronomers.

ALUMINIUM, which is finding application to so many fields of work, might be with advantage applied to lens mountings and the metal work in cameras and tripods, owing to its strength and lightness. It is not at all unlikely that it may be used for plate holders, trays, and numerous adjuncts to the studio and darkroom.

It is proposed to organize a camera club in the Y. M. C. A. of Newark, N. J., and from the interest which has been manifested in similar organizations

elsewhere and the success which has almost invariably attended their efforts, we feel safe in predicting a live and flourishing club at no distant day.

At the close of the recent International Photographic Congress at Paris, all the reports and documents pertaining to questions of importance discussed during the sitting of the Congress were collated into one volume, together with several papers bearing on leading topics, among which are one on the method of measuring the sensibility of photographic preparations, by M. A. de la Baume Phuriel, another on measuring the illumination of lenses, by M. le Ct. Möessard, and still another by M. le Commandant Legros on the determination of the focal length of lenses.

With the change of publishers of the *Photographic News* of London, by which it has passed from the hands of Messrs. Piper & Carter into the control of Messrs. Alexander & Shephard, it has also taken on a new dress, and we would congratulate the publishers on its neat and befitting attire. We hope they may have to cut a larger pattern of goods each year for the wearer than was required the year before.

THE exhibition lately given by the Newark Camera Club, was attended by about 2,000 people and great interest manifested. A net gain of \$163 was the result, which must be very gratifying to those having the entertainment in charge. A lantern slide exhibition is now being arranged for, to take place shortly.

THE fourth annual exhibition of the Boston Camera Club closed on the 16th, having been open from the 6th inst. The exhibition was more noticeable for quality than quantity. Prominent among the exhibitors are Mr. William S. Briggs, with prints on plain and Japanese papers; J. E. Chase, with landscapes and cattle; W. L. Underwood, G. M. Morgan (Vice-President of the Club), Benjamin B. Kimball and others.

A NEW and extremely ingenious form of incandescent platinum light has been invented by M. Paquelin, consisting of a length of platinum wire, coiled upon its own length and inserted in a bulb of platinum having a hollow stem. A mixture of hydro-carbon vapor and air is then forced into the bulb, which causes the platinum to become incandescent, more or less, according to the amount of pressure. The action continues if the whole is placed under water and the effect is said to strongly resemble and compare favorably with electric light.

THE New Orleans Camera Club will hold an exhibition of its work from the 24th to the 28th inst. to include prints on the various kinds of paper and lantern slides as well. Three prizes will be given, two for excellence in work and one for the best individual display.

A RECENT book which should be of much interest to photographers has lately been indexed in the Smithsonian collection, entitled "A Bibliography of the Chemistry of Light," by Alfred Tuckerman. It is an 8vo book of twenty-two pages, published in Washington in 1891.

WE are notified that the *American Amateur Photographer* will hereafter be published by the *Outing* Co., who have bought a controlling interest in it. There will be no change in the editorial management, which will continue under Miss Catherine Weed Barnes and Mr. F. C. Beach.

A SERIES of interesting experiments have lately demonstrated that light is visible through an opening of only the one-forty-thousandth of an inch in width. The measurements were ascertained by forming a very thin tapering wedge of light between two straight edges placed against the light entering a darkroom.

AN improvement for the stereoscope, in the matter of a reversing eyepiece, has been patented by Mr. B. Acres, consisting of a lens tube somewhat longer than the ordinary one, containing four lenses, separated from each other in such a manner as to reverse the image, rendering it possible to print a transparency direct from the negative before cutting it. The result is similar to that obtained with reversing prisms, but is arrived at very differently.

THE Colorado Camera Club of Denver, which was organized on the 20th October, 1891, has already given two illustrated lectures, and expects to complete and occupy its new quarters during the month.

AN interesting relic has lately been shown by Mr. Frank Haes, of England, in the shape of an original letter of instruction for the working of Daguerre's process, which is supposed to have been written by Daguerre himself, having been received by Mr. L. Loewe, private secretary to Sir Moses Montefiore, directly from the inventor.

THE annual report of Prof. E. C. Pickering, chief director of the Harvard College observatory, shows that there now exist in the observatory about 30,000 photographs of the stars and spectra. In connection with the Henry Draper Memorial Fund there have been constantly employed during almost every clear night, three photographic telescopes, by which nearly one-half of the northern sky has been photographed; 2,505 photographs having been obtained with the 8-inch telescope there, while a similar instrument established in Peru has made 1,224. An exposure of ten minutes is given in each case.

THE two glasses for the flint lenses of the Bruce telescope have been safely delivered in Cambridge, and the crown glasses are expected within a short time. Everything is in readiness to push the work of construction as soon as the lenses are ready. An automatic photographic transit instrument has already been constructed to work in conjunction with the new telescope, and great results are looked for on its completion.

A NEGATIVE of especial interest to scientists has been obtained by Professor Pickering in the clear atmosphere of the high Andes, with a short focus lens and an exposure of six hours, in which groups of nebulae were shown that had hitherto been unsuspected. Dr. Gill, the eminent astronomer, in comparing this negative with others of similar nebulae, believes that they confirm Laplace's theory regarding the early existence and growth of the sun.

WE call the attention of our readers to the excellent paper of Mr. Ellerslie Wallace on "Silver Printing" in this issue of the BULLETIN. He calls attention to the use of alum in the printing bath as suggested by the late Mr. H. T. Anthony, and often forgotten; it is a most useful addition.

A PLEASANT evening was spent at the new rooms of the Brooklyn Institute Photographic Section, 201 Montague street, on Wednesday, January 13th. Some fifty members assembled to witness a demonstration by F. J. Harrison of the American Aristo paper. A large print on this paper was presented to the section and will help to ornament the walls.

LETTER FROM GERMANY.

BY DR. H. W. VOGEL.

Photography in Natural Colors.—A New Lens for Long and Short Distances.—Photography and Police.—Chicago Exhibition.—Accident with Magnesium Lamp.—About Photogravure.

PHOTOGRAPHY is progressing rapidly. The great problem of photography in natural colors is no longer a problem; it has been solved after my principle through the efforts of Mr. Ulrich, and my son, Dr. E. Vogel. The results are such that the director-in-chief of our National Gallery, Mr. Jordan, has given permission to reproduce all the pictures of the gallery by this process, and in this way save all the pictures, which in the course of time may be injured by decomposition of colors, varnish, etc. You will see proofs of the process pretty soon. Another progress in the optical field has been made. To make larger and smaller pictures near by and at a distance of the same length from the same standpoint, and with the same camera, several lenses were required until recently, one with very long focus, if the picture of a distant object was desired in large size, and one with short focus for near by objects. Dr. Miethe has succeeded now in constructing an objective which is changeable, so that it will give long or short focus.

Dr. Miethe says: The size of the picture of an object on the ground glass depends upon three circumstances: First, the focal length of the objective; second, the distance of the same from the object; and, third, the size of the original. Two of these circumstances may be varied generally, the distance from the object and the focal length of the lens. If the object can be approached as desired, or if lenses can be applied of any required focal length, every object can be photographed in any desirable size. But, unfortunately, this cannot always be done. The approach to an object may for many reasons be impossible or impracticable. Inscriptions and architectural details, wild animals, flying birds, ships, etc., can oftentimes not be reached by the photographer, because he has to take his views from too great a distance. In this case remains as last possibility the application of long focused lenses, which is again very restricted.

Suppose we had to take a view of an inscription on a rocky cliff at a height of 100 m., with the size of letters 20 cm. To avoid a bad perspective we will have to take it at a distance of at least 250 m. from the cliff. Our distance from the inscription will then be in an air line 280 m. To make a distinct picture

the letters in the same should be at least 4 mm. high. But to obtain this, as a simple calculation will show, an objective of 5.6 focal length would be required; that is, a camera with almost 18 feet bellows. To have such a camera for outdoor photography would be rather troublesome. Such and similar cases are frequently met with in practical life by the architectural photographer on exploring expeditions, etc. Small views and subsequent enlargements will necessarily suffer, because the grain of the plate, when an enlargement is made, will be so visible that all other detail disappears. I have tried to remove these obstacles, and, just the same as many amateurs and professional photographers have done before me, have tried the application of the telescope for this purpose. The result was far from satisfactory. Aside from the circumstantial arrangements I did not succeed in obtaining one passable picture. Cameras having a telescope in place of the lens are also too bulky and top-heavy, and vibrations cannot be prevented on even the most solid tripod.

Ultimately by application of a new principle we have succeeded in surmounting the principal difficulties. I use simply a combination of a convex lens of long focal length with a concave lens of short focal length, which are connected at variable distances. Such a system has, as can easily be proven, the following properties :

First.—It depicts enlarged, reversed pictures of distant objects.

Second.—It can be used for every camera length, therefore for every desired picture size.

Third.—The pictures at a certain focal distance increase in size in proportion to the greater difference in the focal length of both lenses.

An example will explain this :

Suppose we set a convex lens of 19 cm. focus to the distance of about 15 cm. from a convex lens of 1 cm. focus, and placed the same in front of our inscription at a distance of 280 m., the system will produce a picture with a camera length of 35 cm., which is just as large as that of the lens of 5.6 focal length. By a small variation of the distance between both lenses larger or smaller pictures can, of course, be produced at corresponding camera length. The system is in the hands of the optician, and we may shortly look for a sample of this new lens.

Photography is taking root everywhere nowadays, as is shown in the new and spacious building of our police department. Room No. 82 is the place where all persons, whose pictures are considered a desirable acquisition for the Rogues' Album, are photographed. The elegance of photographic requisites to which we are accustomed in our first-class galleries is here, of course, wanting. A plain apparatus, an arrangement for three magnesium flash lights (almost all the pictures being made by that light, in consequence of which the room is held dark), a screen covered with gray paper serving as a background, a gas lamp, some arrangement to produce a favorable illumination of criminal physiognomies, in the corner a dark closet for the changing of sensitive plates, on the other wall a table with two chairs, finally the chair for the sitter—this is about the full complement with which this model gallery is adorned. Two round pieces of paper, one a little larger than the other, are fastened to the door. The sitter has to look at one of these points, according to whether his picture is wanted "full face" or in "profile." The stereotyped "thank you" of our photographers, after the picture has been taken, is not heard here, no matter whether the

criminal was submissive or not. Many of these gentry, of course, put the patience of the photographer to a test by distorting their features. But the "photo" has patience. If I cannot do it now I will succeed later on, he thinks, and if the criminal relaxes for only a moment the flash light will do its duty, and the picture is taken. Instantaneous photography finds a good application here.

The question of participating in the Chicago Exhibition is being actively discussed in photographic circles here, and although the views disagree somewhat, I believe that you can calculate upon a numerous participation, in consideration of the large photographic export of Germany to the United States. It would be of importance now to know if the Chicago photographers, similarly to the Philadelphia photographers of 1876, contemplate the erection of a separate exhibition building for photography. This would simplify the matter considerably for us, and these lines may probably give the proper stimulus.

Although the magnesium flash light is now generally known, accidents by carelessness still take place. Messrs. Sachs & Co., of this city, have sent a communication to the "Verein" with the remnants of an exploded flash lamp, and a letter from an amateur, in whose hands the lamp exploded, to advise the members of the accident and caution them. According to this letter the magnesium flash lamp, which so far had proven to be entirely free from danger, exploded with great power in the hands of the reporter, who was considerably wounded on one hand. The "Verein" received these communications with astonishment and a lively discussion was the result, with the unanims opinion that an explosion of this Pust-lamp (signifying a lamp into which the magnesium is blown) with pure magnesium appears hardly imaginable, but that very likely so-called Blitz-pulver (an explosive mixture) was used in place of pure magnesium. It was indeed afterward acknowledged by the writer of the letter that he had not used pure magnesium powder.

My son, Dr. E. Vogel, who for several years has been occupied with photography, has made many interesting observations.

The veil of secrecy which covered the photo-engraving processes has been lifted during the last few years, and several prescriptions about the production of gravure plates have already been published. In all these prescriptions, however, not sufficient force has been laid upon certain conditions, whose exact observation is indispensable for the attainment of uniform good results. The writer, who has gained a knowledge of the photo-engraving process by self-instruction, flatters himself that he is in a position to give an exact description of this process.

Photo-engraving is decidedly the most simple and easiest photographic etching process, and gives, therefore, among all printing processes the most handsome results.

The principle of photo-engraving is the following: Of a negative a reversed diapositive is produced by means of any desirable process, which is printed upon carbon paper, and is then squeezed upon a polished copper plate in the manner generally used in pigment printing. When the copy is developed a negative pigment picture upon copper is obtained. If the copper plate is now placed in a chloride of iron solution the latter will have an etching action upon the copper. It will act first on the shadow parts of the negative where the pure copper is exposed, then it will penetrate the thin parts of the pigment negative,

which correspond with the half tones of the picture, and finally it will even act upon the dense parts. If the action of the etching is now interrupted at the proper time, that is, before the chloride of iron solution has also penetrated the thickest parts of the negative, which correspond with the light parts of the positive, a positive, deeply etched into the plate, is obtained after removal of the pigment film. The shadows have the deepest etching, less deep are the half tones, while the high lights on which the etching did not act appear as bright copper. The so produced plates can be used for printing like engraved copper plates. For a successful working in photogravure a perfect knowledge of the pigment printing process is necessary, and every one who is well versed in pigment printing will easily learn how to produce gravure plates. The following is an exact description of the process :

1. *Character of the Negatives.*—Most of the photographic printing processes, as, for instance, zinc etching, lichtdruck, etc., require as prime condition for the production of good printing plates a faultless negative. In the zinc etching process, for instance, it is almost impossible to obtain good results from a flat or weak negative.

In the photo-engraving process it is a little different ; a well exposed normal negative is, of course, here also to be preferred ; it is, however, possible to produce serviceable negatives from weak or hard negatives by proper treatment, to be explained hereafter.

2. *Production of the Diapositives.*—From the negative to be reproduced in gravure a reversed diapositive is first made. This is done by way of the pigment printing process. The paper suitable for this purpose is Braun's diapositive paper, which has the advantage of all other paper that it will adhere to the glass without any previous preparation.

The paper is bathed in the well known manner in a bichromate of potassium solution, then squeegeed—avoiding thereby all air bubbles—upon a glass plate, well cleaned and rubbed with talcum and freed from scratches, etc., and dried. After complete drying the edges of the paper are cut and the same can then be easily stripped from the glass. By drying the paper upon glass the paper will have a highly glossy surface. This has the advantage that during printing it will lay close to the negative, so that faultless and sharp diapositives are obtained. The diapositives may just as well be produced upon bromide of silver gelatine plates in the enlarging and reducing camera. It should be observed here that, to produce a reversed diapositive the glass side of the negative should be toward the film side of the bromide of silver gelatine plate upon which the positive is to be made.

The latter method has the advantage of pigment printing, that it permits much quicker work, and at the same time can be connected with an enlargement or a reduction. By suitable development softer diapositives can also be made from the hard and stronger ones from the weak negatives.

SILVER PRINTING.

BY ELLERSLIE WALLACE.

SILVER prints on albumenized paper are still so extensively made in spite of rival processes, that I need make no apology for asking the attention of readers of the BULLETIN to come to practical details of making them.

After many years spent in the pursuit of photography, I can still say that it

will put most other printing processes to their trumps to beat a first-class silver print. Neither am I able to understand what some people mean by objecting to the "tone of the silver print," as they say. For the great range of tone or varying color of the print obtainable, is the strong recommendation of the process, *versus* the bromide and platinum, which are much more limited in this respect.

Presupposing that the albumenized papers and different chemicals employed are all good of their kind, the water for the washing and the toning and fixing baths requires some attention. For instance, while I should not hesitate to use hard lime-water for the long washing of the prints after fixing, I should on no account dip them into it for the first wash before toning. For this soft water only should be used, as should also the last rinse of all before hanging the prints up to dry. In places like Philadelphia the water supplied by the city is subject to great fluctuations in its quality, and although free from lime, or nearly so, contains, at times, finely divided mud in such quantity as makes it useless for the last washings. In fact, no photographic establishment can be considered complete without a good filter, and it will often have to be kept in operation day and night. Mud in the water easily works its way into the texture of the paper; but it is very troublesome to remove it. I have found, however, that three or four rinses with clean filtered water before hanging up to dry renders one comparatively independent. The toning and fixing baths will of course be made of the same.

The following formula for a silvering solution is perhaps open to unfavorable criticism from the number of articles called for, but I can only say that fifteen years' continuous use of it in all sorts of weathers and with all sorts of papers has abundantly proved its value. For 32 ounces of bath take

| | |
|------------------------|---------------|
| Nitrate of silver..... | 1,600 grains. |
| Water..... | 4 ounces. |

Dissolve and add $\frac{1}{2}$ ounce strongest ammonia. Redissolve the brown precipitate with a solution of nitrate of ammonia (a small amount only will be required). The bath is now strongly alkaline, and is to be nearly, but not quite, neutralized with pure nitric acid. Add water until the whole measures 29 ounces, making up to one quart with alcohol. A salt water solution of alum is slowly added until slight precipitation of the silver ensues. The bath is always kept slightly alkaline.

I can certainly say that this bath possesses great coagulating power, and that printers using it will not be troubled with "soft albumen," as it is called. This is the result partly of the high strength of the solution (56 grains to the ounce) and partly of the alcohol and the alum. In regard to the latter, let me say that it is a matter of great surprise to me to see how few printers are willing to benefit by it as proposed by the late Mr. Anthony, and how they still complain of bad surfaces to their prints, and blame the paper. I deem it one of the most valuable suggestions ever made in connection with photographic printing.

A very useful piece of furniture in the printing-room is a cloth covered table large enough to hold a full sized sheet of albumen paper. I do not mean to inculcate the employing of Sybaritic luxuries in the darkroom; but it is very convenient to lay each sheet on its back on the cloth, and pass over the face with a chamois skin immediately before floating. The paper holds well to the cloth, and there is no danger of its slipping and tearing while the face is being rubbed. This simple thing is the only reliable safeguard against "tear-

drops" that I know of. If the paper repels the silver, the strength of the bath, temperature of the room, etc., etc., may be altered again and again to no purpose.

Good albumenized paper can and ought to be free from smell. It ought not to be too dry before floating. If stored in a hot garret it is advisable to lay out the number of sheets required for the day's work on a clean table in the cellar over night, or until the paper absorbs enough moisture to make it take the silver evenly. It is hardly necessary to remark that photographic papers of all kinds should never be stored in cellars unless packed in soldered tin cases.

I once had a large number of 8 x 5-inch prints to make on a sample of paper that had been unevenly albumenized. The sheets had evidently been dried over a pole, so that the albumen drained to the edges and collected there thickly, while the center was left with but little upon it. No one would have suspected this, for the paper was remarkably fine in all other respects, and in fact I selected it on account of its brilliant surface. The unevenness of the albumenizing became painfully apparent when toning. The central portions of each sheet where the albumen was thin toned ashy blue long before the edges had passed the sepia stage. But I got over this very nicely by trimming out the prints 8 x 5 lengthwise from the edges and from the centers, so that the thin central parts and the thick edges were each consumed by themselves. A little attention to the toning made it easy for me to turn the prints out quite uniform in color.

The cutting of the silvered paper is a troublesome part of the printer's duty. I, myself, prefer folding the sheet to the size, and then having pressed it on a piece of plate glass with an old negative, to cut around the edges with a sharp knife just as if trimming a print. Each piece thus comes out neatly cut to size, with no rough edges to catch in things and tear, as happens so often when a paper knife is used. Those whose hands are very strong sometimes prefer a large pair of shears.

Before proceeding further I wish to say a word about trays for the silver solution. I know of some printers who leave the solution always in the tray, and never filter it. After the day's work, the solution becomes slightly turbid and deposits a black sediment, while at the same time the surface gets covered with scum. The following morning, the first sheet floated removes this scum, leaving the bath clear for what follows. Additions of nitrate of silver and water or alcohol are made from time to time. There is a tight fitting lid to the tray to prevent excessive evaporation. Now, for my part, I should not care to risk such a large bulk of silver solution as this necessitates in any other receptacle or tray than one made of the best quality of solid glass, and this would be an expensive affair. The following simple idea will be useful to many. Get an ordinary dining-table tray made of oak wood. See that the joints are tight, and, if possible, have the bottom made in one piece. Let it be, say, 24 x 19 inches in size, and deep enough to admit of spaces cut out at either end for handles. Procure a few ounces of the purest solid paraffine, and having warmed an old flat-iron, take the tray before the fire and melt the paraffine into the wood until it will absorb no more. The tray is now ready to be used for holding the silver bath, which may safely be left in it for some hours. The emptying out is the easiest thing imaginable. The whole concern weighs but a trifle, and the valuable fluid runs off the paraffined surface without leaving a drop behind. I

greatly prefer to work in this manner, for the solution can be bottled and stood out of the way, and the large expense of large glass dishes saved.

It is one of the open secrets of printing, that the silvered paper may be preserved for some days or weeks by pressing it between sheets of blotting paper that have been steeped in a saturated solution of bicarbonate of soda and dried. The paper is supposed not to have been fumed, and must be perfectly dry. Having a number of these soda pads in readiness will often effect a considerable saving. If a storm suddenly comes on when a large batch of sensitive paper has been prepared in the early morning hours, the paper need not be wasted, but kept until a suitable opportunity offers for using it. There is no loss of good quality.

Contrary to the opinion and custom of many excellent printers, I can heartily indorse the practice of silvering the paper at night, and using it the following day. As one of the important points in preparing sensitive paper is to have it quite dry before fuming, the plan alluded to is convenient for this one thing alone. But apart from this, I have always succeeded in obtaining more brilliant and satisfactory prints when the paper has been silvered over night, nor am I prepared to give any theoretical reasons why it is so. The time and labor of the printer are greatly economized by such a method of working.

Of the great variety of models of printing frames on sale at the stock houses, I much prefer the old-fashioned form with a plate glass front and two hinged cross-bars having the springs attached to them, folding over and locking with a thumb spring. They are known in the trade as the "deep" frames and are preferred for the larger sizes, say 10 x 12 and upward.

A good exposure to the full sun southward is of course a *sine qua non* for the printing-room, but it will sometimes happen that reflections from skylights or other bright objects are thrown directly upon the shelf where the frames stand. This must be carefully guarded against. For instance, in the summer months, when the sun is high near the zenith, I have had the trouble spoken of, and toward noon it requires sharp watching on my part not to have prints spoiled by the reflections creeping on to the frames while my back is turned for a moment in the darkroom.

If a man does a large quantity of photographic printing he will soon acquire a knack of suiting his manipulation to different kinds of negatives with a readiness that seems wonderful to the beginner or uninitiated person. By this I mean to say that the strength of the light in which the print is made has a great influence upon its quality, particularly in the contrast between its dark and light portions; and the experienced operator can quickly tell whether a particular negative will bear exposure to the full sun, or whether it must be shielded under paper during the printing. The slower the printing, the greater is the contrast and vigor in the print, as a rule. Now, we often find a negative loaded with delicate detail, but not very dense; and while printing it in the full sun would give feeble, muddy prints (no matter how good the paper and how strong the silver), the same negative and sensitive paper would give prints of the finest quality if the printing frame were shielded from the sun under a fold of ordinary white wrapping paper. I doubt whether the importance of this fact is fully appreciated by photographers. It would be an interesting and instructive experiment to take a good negative of only moderate density and make say four prints from it; exposing one to the full sun, another to the diffused light from the northern sky,

a third to the sun with one fold of white tissue paper over the frame, and a fourth under a thicker white paper like ordinary albumen paper. Marked differences will be noticed in the prints both on removal from the printing frame, and in their behavior in the toning and fixing; and the experience thus gained would be valuable in the handling of other negatives.

Beginners in photography are apt to imagine that the tone of a print depends upon the toning bath. So it does in great measure. But the prime factors in this matter of tone, are the character of the negative and the strength of light in which the print is made. For example, the image obtained by the prolonged action of a weak light is quite another thing from that obtained by short exposure to a light of high actinic power. And not only does the image vary *per se*, but, as I before remarked, it behaves differently in the after-processes. This is true also for other kinds of photographic images than silver prints, and an interesting analogy to the fact may be seen in slide making by any of the usual processes.

While discussing the matter of tone, I may say that it is quite possible to tone silver prints nicely by gaslight. At first it might seem absurd to attempt such a thing except by white daylight, but I soon got myself into the way of noting the changes of color while the print was in the gold, by gaslight. I can understand that a numerous class of amateurs might thus do a little silver printing before business hours in the morning (the paper having been prepared over night), and having laid the prints in soda papers after removal from the frame, leave them until evening to tone and finish.

A favorite toning solution among English printers consists of one grain of chloride of gold to every six or eight ounces of water in which thirty grains of acetate of soda have been dissolved. The mixed solution must stand twenty-four hours before using. I myself prefer a bath not weaker than a grain of gold to five ounces of water, neutralized with bicarbonate of soda or borax. These baths can be worked in, say, an hour after mixing. In very hot weather they might be used somewhat weaker.

I have known skilled photographic printers claim that a grain of chloride of gold can be made to tone six full sheets of albumen paper. I mention this only to condemn such practices. A favorite old rule was to allow a grain of gold for every sheet of paper. But I think with modern papers such an allowance is rather too liberal, and that even when black tones are sought for, the one grain of noble metal will tone a sheet and a half of albumen paper or perhaps more. The consumption of gold depends partly upon the first washing of the print, partly upon the constitution of the toning bath, and partly upon the temperature of the latter at the time the prints are immersed.

I have always taken pains to have my prints thoroughly fixed. I believe in the necessity of allowing time enough in the hyposulphite for the removal of all soluble matters, and of having large enough quantity of the fluid to admit of the print being well worked about in it without getting uncovered. The books which treat of photographic printing always direct attention to the importance of working the print about in the toning bath; but the fixing requires just the same care.

If the vexatious appearance called "blistering" makes itself seen, it generally is when the prints are laid in the first wash waters after fixing. The old custom of passing them into a strong brine of salt and water, right from the

hypo, is the best safeguard I know. The action of the hypo is not confined to the mere removal of soluble silver salts. It penetrates the paper and changes its whole character, as can be seen from the heavy manner in which fixed prints sink to the bottom of the washing sink, as compared with unfixed ones, which are much lighter and are easily made to float. The idea that it is the too sudden removal of a very soluble material from the paper that puts things on the stretch, as it were, and that gradual weakening of the hypo, by turning on a small stream of water into the pan, will help to do away with blisters, is a tenable one, I think. But I am rather inclined to lend credence to another idea in this connection, which is that blistering often depends upon imperfect coagulation of that portion of the albumen in immediate contact with the paper. The fact that paper sensitized by immersion into the silver does not blister, while if floated it does, goes far toward proving the matter. I have been so fortunate as to be but little troubled with blisters, except when using paper that had been kept in a very hot and dry storeroom. The plan of laying it out in the cellar, as I previously mentioned, removed the tendency. I believe that more attention paid to the condition of the paper at the time of floating, together with a silver bath made like the one I have described, which will thoroughly coagulate and harden any kind of *good* albumenized paper, would get rid of the trouble. It might seem that papers floated for a long enough time to show the water-mark when dry, would work better; but experience proves that the time of floating has nothing to do with blistering. A suggestion has recently been made in England, that the prints be thrown into boiling water after removal from the printing frame. This takes out the size, and reddens the print quickly and violently. On the principle that desperate cases require desperate treatment, I can imagine that I might resort to such heroic means, but I should prefer giving the milder ones a thorough trial first.

ON THE EXPOSURE TIME.

BY T. C. DUCHOCHOIS.

SINCE the discovery of the alkaline developing process exposure has acquired a great importance. Heretofore it was difficult to determinate *à priori* the correct time, for the developer acting at once and in a minute exhausting its developing was uncontrollable, and the exposure was confined between certain limits, under and beyond which nothing but failures could be expected; were the time short, a picture with intense lights and no or little details in the shadows was the result; if one lengthened it, the lights were solarized, that is, without gradation.

The difficulty disappears when the development is effected by the alkaline method, which allows a great latitude in the times of exposure, provided one knows how the operation should be conducted, as otherwise the results would resemble those obtained by an acid developer.

Of course when the exposure time is short (we do not mean an under, *i. e.*, insufficient exposure, which never gives any but bad photographs) the picture will not be a perfect one, but still if the fine details are wanting in the shadows, there will always be enough details to permit one to attenuate the defect by a judicious retouching. On the other hand, good, perfect pictures are obtained whenever the period of exposure is much prolonged; not, however, so exaggerated as to cause an advanced stage of the reversal.

Generally the exposure times are classified as *under*, *normal* and *over* exposures. We think that this classification misleads the beginners, moreover it means absolutely nothing. It may be useful to explain the failures arising from the reversal or from under exposures, those during which the weak and less refrangible rays do not or not enough impress the photo film.

In reality there is only one exposure, that which is *sufficient* for the objective view ; for example : the time may be calculated to photograph an important subject in the lights and more or less sacrificing the rest, that is, the objects in the shadows. It is what happens by exposing instantaneously, and often in taking portraits of children and of persons who do not stand still for more than one or two seconds. Necessarily the contrasts are then greater than in nature, and the photographer has to rely on certain artifices to soften them. These two cases excepted, it is wrong to expose for the lights when reproducing subjects in half tone.

The rational method of exposing, that by which perfect pictures can only be made, is to allow the weak and less refrangible reflected lights to fully impress the photo film; for one obtains then all the details in the shadows and orthochromatic effects without loss of gradation in the high lights, except, perhaps, the impairment of the extreme penumbras ; but this is more than compensated by the natural appearance of the picture. To obtain this result it is evident that the exposure should be prolonged, what some operators still call over-exposure, because such a period, as twenty seconds to photograph with a lens, 12 inches focus, stop $f/32$, a waterfall surrounded with dark green foliage, as eight or ten seconds for a glacier with fir trees, black rocks, etc., in the foregrounds, leads, where the special action of each of the components of the alkaline developer is not well understood, to the production of a picture in which the lights are represented by white masses.

We need not explain how in this case the development should be conducted; it is described in the recent manuals of photography.* We shall simply remind the reader of the following rule :

Expose for the details in the shadows, and its corollary.

Develop to first bring out the details and afterward to obtain intensity.

The only exception which presents itself is when photographing white and black subjects, for then one must expose for the whites and develop to force them out at once with great intensity.

TONING LANTERN SLIDES WITH URANIUM SALTS, WITH REMARKS ON THE COLOR OF SLIDES IN GENERAL.

BY ALFRED STIEGLITZ.

[Read before the Society of Amateur Photographers of New York.]

EXPERIMENTS in toning slides with uranium salts have led me to adopt the following simple working methods : Give full exposure and develop with any ordinary developer until the slide looks somewhat flatter than it is to appear when finished ; in other words, the highest lights must have a silver deposit in them and not be clear glass. After having fixed the slide in hypo in the usual

* See "The Photographic Image," a treatise of the development in the gelatine, collodion and ferrotype processes, etc. E. & H. T. Anthony & Co.

way, wash it thoroughly under a tap for a few minutes, the elimination of the hypo being of importance to insure success in the toning operations which are to follow.

Make up the following three stock solutions, which can be made up in a few minutes and keep indefinitely :

I.

| | |
|----------------------|------------|
| Uranium nitrate..... | 1 part. |
| Water..... | 100 parts. |

Filter, in case the solution is not clear, but this is generally unnecessary.

II.

| | |
|-----------------------------|------------|
| Potassium ferricyanide..... | 1 part. |
| Water..... | 100 parts. |

III.

| | |
|----------------------|-----------|
| Ferric chloride..... | 1 part. |
| Water..... | 10 parts. |

Everything is now ready for the toning, and the following methods are employed :

(a.) FOR CHOCOLATE BROWN TONES.

Take ten parts of I and one part of II and permit the slide to remain in this solution until the desired tone has been reached. In order to control the procedure of the operation, examine the slide by transmitted light every ten or fifteen seconds. The whole operation rarely lasts a minute. After the desired color has been produced in the slide, wash the latter for a few minutes and then place it on the rack to dry.

(b.) BROWN TONES.

Take five parts of I and one part of II and proceed as in *a*.

(c.) REDDISH BROWN TONES.

Take equal parts of I and II and proceed as in *a*.

(d.) RED TONES.

Take one part of I and two parts of II and proceed as in *a*.

In order to keep the high lights clear in this operation a few drops of glacial acetic acid solution added to the toning solution may be used with advantage. I myself never use any, not deeming it necessary if the toning operation is carefully performed.

(e.) GREENISH BLUE TINTS.

Take equal parts of I and II, and tone the slide until it is of a very dark color and very dense. Rinse for three or four minutes, and then plunge into a solution of one part of III and five of water, in which the slide is allowed to remain for at least five minutes. It is then washed and dried, drying out in a greenish blue.

(f.) BLUE TONES.

Instead of plunging into a solution of one part of III and five parts of water, as in *e*, take the solution as it is, and allow the slide to remain in that for five minutes as in the above, after which wash and dry. Continued washing will not harm the slide, but a simple rinse will suffice.

The tone attained in this manner is an excellent one for seascapes and moonlight effects.

In case the resulting slide after toning is not satisfactory, it is easily brought into its original state by dipping it into a dilute solution of potassium cyanide for a few seconds, upon which the slide regains its original tint. Do not allow the slide to remain in the cyanide solution longer than absolutely necessary to remove the toning stain, inasmuch as the solution is a powerful reducer, and would in a short time eat away the whole picture. After having washed the slide after this cyanide treatment it may be retoned again with any one of the above mentioned formulas.

In case it is desired to obtain similar results with other salts than uranium nitrate and potassium ferri-cyanide, slides can easily be toned brown or red by treating them in the following simple way: After having washed the fixed slide thoroughly, dip it into a concentrated solution of bichloride of mercury until well bleached, after which operation wash for at least ten minutes in running water, and then color with a concentrated solution of sulphite of soda for brownish tones or with a concentrated solution of carbonate of potash for reddish ones.

The results are generally very fine. This method led me to make the following observation. It often appears that the films of slides after developing with hydroquinone are stained a deep yellow or even orange, and that such slides are good only for cover glasses after the film had been carefully removed. This is no longer the case. Should the stained slide be good in all other respects, do not throw it away as heretofore, but immerse it for a short time in bichloride of mercury, which bleaches the color at the same time that the silver image is bleached. Upon treatment with either ammonia, sulphite of soda or carbonate of potash, the stain will have entirely disappeared and the resulting slide will often turn out to be a gem of the collection.

Now a few words as to tones in general. Except for exceptional cases, I think it advisable not to tone slides, but to try and get the fine brown color directly in development, a color so easily obtained by the well known formula:

| | |
|---------------------------|----------|
| Hydroquinone | 1 part. |
| Sodium sulphite | 4 parts. |
| Potassium carbonate | 3 " |
| Water | 85 " |

Using one part of this solution with four parts of water, after having exposed four times as long as would have been necessary to obtain a black tone with the normal developer, that is, one part of the stock solution and one part of water.

For certain effects, though, toning is very advisable, the choice of color depending entirely upon the good taste and judgment of the operator.

These few remarks will, I hope, lead some of my colleagues to further experiment in this particularly fascinating branch of photography, and I sincerely hope that they will soon improve upon my own crude experiments.

◆◆◆

A NEW RESTRAINER.—The following mixture, which is recommended in the *Wochenblatt*, is said to give much more harmonious and softer negatives. From 7 to 8 grams of potassium bromide and from 2 to 3 grams of potassium iodide are dissolved in 100 c.c. of water, and the solution thus produced is employed in the same way as the ten per cent. solution of potassium bromide which is generally used.

COPYING BOOK ILLUSTRATIONS AND OTHER SIMILAR SUBJECTS BY MEANS OF ARTIFICIAL LIGHT.

BY T. N. ARMSTRONG.

VII.

WHEN it is desired to produce lantern slides from negatives of book or other illustrations by means of the now popular lantern plate, the pictures or objects are best copied on plates of a similar size as the resulting transparency is to be, by means of contact printing, and precisely the same points as I have specially dwelt on in my previous articles when dealing anent the production of negatives must be observed when making such negatives for contact printing. With most workers contact printing is deemed so easy that it is looked upon as child's play. I have long ago, however, come to the conclusion that but very few of the new school of workers really know how to properly set about the contact printing of lantern slides. The mere placing of a sensitive plate in contact with a negative and giving it a flash exposure to a gas jet is, doubtless, the commonly accepted form of all that is needed to produce a lantern slide by contact; but this becomes a very uncertain and unsatisfactory method of going to work when a worker comes to know the more certain and sure method of setting about the operation.

The exposure of a plate to a naked gas jet in itself is by no means the best way of making the exposure: first of all, no two exposures are made alike, or at least it is very difficult to do so, owing to the uncertainty of holding the plate on all occasions at exactly the same distance from the flame. In preference to a naked gas flame for this purpose is the use of a paraffin lamp having two protecting glasses, the inner one of ground glass, which may be a fixed screen, and an outer folding screen of ruby glass. When such a lamp is easily manipulated from the outside in the matter of raising or lowering the lights, it stands out far in advance of a common gas jet for contact printing. Such a lamp is best placed in a fixed position in the darkroom; and at distances varying from 3 or 4 inches to a foot guiding bars are placed on the table or bench in front of the lamp, square onto its face, to so place the printing frame with negative against, and by this means the picture is always held square onto the source of light; then again it will be found in practice that according to the density or color of the negative, so should the lamp be adjusted as regards a strong or weak light to print the same. How many workers, I wonder, ever give a thought to this matter? Thin or dense, it is all the same to them—up goes the gas jet, the negative carrying the sensitive plate is held at arm's length in front of it, and they trust to luck for a fair exposure. Then, again, how few workers fully realize the fact of the light striking in through the sides of the glass and fogging the plate for a considerable distance round the edges of the picture? In olden times it was recommended to edge the glass with black varnish to prevent this—a very good and safe preventive truly, but I find a much simpler plan is to make a printing shield by cutting a square aperture about a sixteenth of an inch less than $3\frac{1}{2} \times 3\frac{1}{2}$ out of a piece of opaque paper; this shield is then gummed down onto a sheet of glass 5×4 inches, and when the negative and sensitive plate are placed just right in their place on the shield, no light can possibly enter at the edges and cause fog. With such a simple little printing contrivance almost perfect results are obtained. An intelligent worker must study to give a correct exposure in contact printing, and this exposure must dovetail with the particular form of developer he is accustomed to work. I prefer long exposures; sometimes they run into minutes instead of seconds, as some would give to a gas flame; but then I make the amount of light suit the density of my negatives.

When dealing with the production of lantern slides from book illustrations, it has occurred to me, that were I to relate a very neat and simple way in which a particular class of illustrations may be readily produced by a mere tracing operation, it might tend to cause some beginners to practice this neat way of turning out a hand-made slide.

In my practice I always keep a stock of gelatinized glasses ready for my collodion work, and I find that with such I can trace over and make excellent productions by using a fine etching pen and ticketing ink. If any of my readers should have difficulty in procuring this kind of ink they can make a very good substitute by dissolving a piece of lump sugar in ordinary writing ink. When doing this tracing operation the main thing is to get the ink to take kindly to the glass. If a worker will prepare a very weak solution of gelatine and flood the face of the glass plate, and then carefully dry the same free from dust, he will find he can write or sketch with the greatest of ease on its surface, and this being so it becomes a very easy matter to copy some rough sketches by hand, which, when projected on the screen in the shape of a lantern slide, will give unbounded satisfaction.

PHOTOGRAPHIC CHEMISTRY.

BY R. MELDOLA, F.R.S., *Cantor Lectures at Society of Arts.*

(Continued.)

WE are thus brought face to face with the remarkable fact that a film of pure dry haloid gives no product which is more easily reducible than the original haloid by any reasonable amount of exposure to light. Let the same haloid be diffused in fine particles throughout a sensitizing vehicle such as collodion (with the necessary preservative) or gelatine, and an exposure for a few seconds or a minute fraction of a second gives a product which is far more readily reducible than the unexposed haloid. It may be pointed out that it is extremely difficult to see where the necessity for invoking the physical theory of the photographic image comes in when these facts are fairly weighed.* The facts themselves can be easily demonstrated without any appeal to a photographic plate. It is only necessary to take one of the brominated silver mirrors and streak it with a dilute solution of gelatine, allowing the solution to remain for ten or fifteen minutes in contact with the film. The gelatine stripes can, if necessary, be kept moist by adding water from time to time. The plate is then exposed to strong light for a few seconds, washed with warm water to remove the excess of gelatine, and then developed with a weak ferrous oxalate solution containing plenty of potassium bromide. If the experiment has been properly made, the stripe under the gelatine develops before the remainder of the film is attacked.

From this and many analogous experiments which might be made or quoted,† it will be made clear to the student that the function of the sensitizing vehicle is of a very high order of importance. It will be seen also that the particular vehicle now in vogue, gelatine, is a particularly good sensitizer, and it is legitimate to connect its sensitizing action with its well known power of taking up bromine. It may be asked whether it is more probable that mere contact with a solution of gelatine should so alter the physical condition of the haloid (as in the last experiment) as to convert it

* In his inaugural address to the Photographic Section of the Liverpool Physical Society (January 19, 1891, "Photography;" February 19 and 29, 1891), Dr. F. Hurter states that it has always appeared impossible to him "to reconcile the short exposures necessary for the production of photographic images with any theory which demanded the absolute separation of the halogen, or part of it, from the silver." He bases his objections to this (chemical) theory on quantitative experiments, which go to prove that the energy supplied by the initial source of light is totally inadequate to account for the decomposition of the haloid, or the quantity of silver produced on the film by subsequent development. It does not appear to me, however, that these experiments or calculations in any way affect the chemical theory of the photographic image. The actual amount of photochemical decomposition, as measured by the quantity of silver produced on reduction, may be, as the author states, connected with the initial source of energy by a logarithmic law. But this does not prove that no separation of halogen takes place; the energy is not to be regarded as acting upon AgBr alone, but upon a most intimate mixture, or possibly upon a compound of AgBr and gelatine. The latter substance is well known to combine with bromine to a very considerable extent (20.5—22.9 per cent.; see Weyl in *Chem. Centralbl.*, 1878, p. 198, and Knop., *ibid.*, 1879). The action of light on the photographic film is rather comparable with the action of heat on an explosive mixture or compound; the total energy evolved on the explosion of gunpowder is not dependent on the amount of energy supplied by the spark which determines the explosion.

† See section iii. of chap. x. of Eder's *Ausführl. Handb.*, part iii.

from a comparatively insensitive to a highly sensitive physical modification, or whether it is more probable that the gelatine should act in the same way as the reducing agents used as sensitizers in the former experiments with the coated papers. It may, I think, be fairly taught that the balance of probability is in favor of the purely chemical action of the gelatine. In accordance with this view is the fact that no collodion emulsion, however the haloid may be modified in physical condition by "ripening," can be made as rapid as a modern dry plate. On the other hand, in favor of the view that some weight must be given to the state of aggregation, it may be pointed out that the silver bromide on glass, although considerably increased in sensitiveness by contact with a gelatine solution, is still much less sensitive than the emulsion.

If, therefore, it is regarded as improbable that mere contact with a gelatine solution can alter the physical condition of the haloid, it may be asked what happens during the ripening of an emulsion. The student will have learnt that, when silver bromide is first precipitated in gelatine, the emulsion is comparatively insensitive. It is only by long contact with the gelatine solution at the ordinary temperature, or by the action of heat for a shorter period, that the emulsion acquires its maximum sensitiveness. It is believed by the majority of photographic chemists that the change which occurs during this process is a purely physical one—that there is a growth in size of the particles, accompanied by corresponding changes in optical properties.* As already stated, it is possible that some such physical changes of condition may occur, and that the increase of sensitiveness may be partly attributable thereto. The condition of the bromide particles in an emulsion is, from the beginning, very different from the condition of the bromide on a film prepared by brominating a silver mirror on glass. Nevertheless, I do not believe that we are at present justified in teaching dogmatically that the whole increase in sensitiveness is due to physical modification only. I must confess that from experiments which I have been making, and which I hope at some future time to continue, I am gradually coming round to the view that more and more weight must be given to the probability of combination between the silver haloid and the gelatine, and less weight to the state of molecular aggregation than has hitherto been conceded. If analogy is wanted in support of this view, it is only necessary to remind you of the existence of the "gelatino-nitrate" of silver prepared in a former experiment. If gelatine can combine with silver nitrate to form a compound capable of photo-chemical decomposition, it is not unreasonable to suppose that a similar kind of compound might be formed from a silver haloid and gelatine, or some constituent of the gelatine, under the conditions essential for ripening an emulsion. It is desirable that the photographic chemist should be prepared for the proof, which may be at any time forthcoming, that the marvelous sensitiveness of the modern dry plate is not altogether due to the particular state of aggregation of the silver haloid, but that the substance which is so sensitive to light is an organic silver haloid compound belonging to that indefinite "molecular" group so frequently met with in this branch of chemistry.

From this stage onward the practical study of photographic processes may be carried on hand in hand with the demonstration of the chemical principles concerned. The photographic image will be regarded as being most probably composed of a product of true photo-chemical decomposition. This product may, or may not, be identified with the "photo-salts," but it is not improbable that its composition may vary according to the nature of the vehicle with which the silver haloid is associated. The sensitive film which is now in general use, will be regarded as a "gelatino-bromide," in the same sense that the term "gelatino-nitrate" has been employed. The photographic image will be looked upon as a design on the surface of the gelatino-bromide, composed of a chemical product more easily reducible than the gelatino-bromide, and invisible simply because of the extreme tenuity of the deposit. When a reducing agent is applied, the material composing the invisible image is alone reduced to metallic silver, and the

* For further particulars, see *Chemistry of Photography*, pp. 120, 132.

picture is said to be "developed."* The subject of development may now be dealt with, and the chemical principles of the process demonstrated. It is necessary to commence by pointing out that a photographic developer may act in two distinct ways. In development by vapor, as in the daguerreotype, and in the so-called acid developers, there is an accumulation of finely divided metal (resulting from condensation in the case of mercury vapor, and from chemical reduction in the case of acid developers) on the material of the invisible image only. If, for example, silver nitrate is reduced by ferrous sulphate or pyrogallol, the pulverulent deposit of metal accumulates by preference on the product of photo-chemical action, and continues to be deposited thereon as long as there is silver being deposited from the developing solution. Where the silver deposit has once formed, there it continues to grow by accretion, and the developed picture is built up of metallic silver. The action is, doubtless, of an electrolytic character, the material of the invisible image and the unaltered haloid forming the two elements of a galvanic couple, and the developing solution playing the part of the electrolyte. To illustrate the mode of action of developers of this class, it is only necessary to use one of the silver on paper designs produced as in the first lecture. An extremely faint design in reduced silver, on being immersed in a solution depositing the metal by reduction, becomes darker and darker by the process of accretion. In order to broaden the student's notions, it must be pointed out and illustrated experimentally, that this process is not peculiar to silver. A design in any freely divided metal, such as mercury, gold or platinum, produced by reduction, chemical or photo-chemical, on a paper surface, can be "developed" in the same metal by immersing it in the solution from which the metal is being deposited by chemical reduction.

The other kind of development effected by such reagents as ferrous oxalate, alkaline pyrogallol, eikonogen and hydroquinone, must be regarded as also due to reduction; but, in these cases, it is the material composing the invisible image which is directly reduced. This constitutes the so-called alkaline development. It must be taught, in connection with this subject, that the silver deposit which results from the reduction of the invisible image is not the exact equivalent of the quantity of material composing that image, but that the reduction commenced on the portions exposed to light extends downward through the film as long as the developer is acting. In fact, it must be made clear that the silver deposit grows by continued reduction, the action in this case also being most probably electrolytic, the elements being the first film of reduced silver, the unchanged haloid with which it is in contact, and the developing solution as the conducting medium.

The final result of both kinds of development is the production of a silver picture composed of far more silver than can be accounted for by the actual quantity of the material composing the invisible image. The two kinds of development may be classified as "accretional" and "reductional" (chemical and physical, according to the Continental photographers). The broad principles of the process having been elucidated, the student may proceed to the study of the individual developers, their mode of preparation, and the probable chemical changes which they undergo when acting upon an exposed plate. In dealing with the latter point, it is not essential that the actual composition of the material composing the invisible image should be known; it is only necessary to regard the action as occurring between free halogen and the reducing agent in the presence of water. In the case of such a developer as ferrous oxalate the chemical change is sufficiently obvious, but the action of halogens and water upon

* It is well known that a reducing agent of sufficient strength to reduce silver bromide directly, such as the ordinary ferrous oxalate developer, may be applied with a gelatino-bromide dry plate. It is generally taught that the haloid is protected in such an emulsion by virtue of the particles being imbedded in the gelatine. I am disposed to believe, however, that the protection is not merely physical, but that the weak chemical combination between the haloid and the gelatine (or one of its constituents) results in the formation of a compound less reducible than the haloid itself. I may point out, incidentally, that the change in size of the particles, and the modification in optical properties undergone by the emulsion during the process of ripening, as well as the increase in sensitiveness, are all in accordance with the chemical theory of the gelatino-bromide film.

organic reducers is far less definite, and it will be safer to abandon all attempts to represent the changes by equations in the present state of knowledge. It may be less satisfactory, but it is a more truly scientific attitude to confess imperfect knowledge than to invent nicely balanced equations which may be quite remote from the truth.

Having mastered the principles of development, it is important that the student should have his attention directed to certain phenomena which connect this subject with the initial action of light on the photographic film. He will have learnt from the previous demonstrations that the photographic image with which he is practically familiar is most probably a product of photo-chemical decomposition. He will thus be prepared for the proof that chemical reducing agents may act in the same way as light; that is to say, that by employing a very slow reducer, and allowing it to act on the silver bromide for a short time, the reduction is carried to the same stage as that which results from the initial action of light. The process of reduction can be arrested at the invisible stage—at a stage intermediate between the haloid and the free metal. The product thus formed, whatever its composition may be, is more easily reducible than the original haloid, and can therefore be “developed” by ferrous oxalate, etc., in just the same way as the invisible image. The simplest way of showing this is to stripe a sheet of paper, coated with the haloid, with an alkaline solution of glucose, allow the latter to act for a few minutes, wash thoroughly, and then develop with weak ferrous oxalate containing plenty of soluble bromide. It may be pointed out that such a result as this, for the experimental demonstration of which we are indebted to Carey Lea, is opposed to the physical theory of the photographic image, since it is difficult to see how the mere contact of a silver haloid with a feeble reducing agent can modify the physical stability of the haloid so as to transform it into a chemically unstable modification.

Another fact bearing on the present subject which must not be overlooked is that mechanical force of the nature of a shearing stress also produces a deplorable impression on a silver haloid film. So far as my experiments have gone, this result cannot be produced except in the presence of a sensitizer; any of the ordinary photographic films will show it, but I have thus far been unsuccessful with the halogenized mirrors on glass. Although negative evidence does not count for much, it appears thus far that the effect is only producible under the same conditions that an invisible image is produced by light. If this be so, then we have an additional argument in favor of the chemical theory of the photographic image; for the researches of Professor Spring, of Liège, have shown that a mixture of compounds can be made to undergo chemical interaction by mechanical pressure alone. The silver haloid and its associated or combined sensitizer provides such a mixture or compound.

In connection with the necessarily related subjects of exposure and development, the phenomenon of reversal must be dealt with. I regret exceedingly that time is pressing me toward a conclusion, and that I can do no more than hint at the mode of treatment of this important subject. I have already expressed the view* that this phenomenon is best regarded as reversed chemical action between the halogenized sensitizer and the material of the invisible image. Since that view was put forward three years ago no new facts have been adduced which are in opposition to it, and I am therefore bold enough to think that it is, at any rate, worthy of being taken into consideration by the teacher of photographic chemistry. In the broadest possible terms, all that we have to consider is that the “photo-salt,” in contact with a sensitizer containing more than a certain quantity of halogenizing or oxidizing material, has the tables turned upon it, to speak metaphorically, and then acts as a sensitizer toward the film which at first acted as a sensitizer toward it. The principle can be demonstrated by utilizing a very old experiment. It is known that potassium iodide is capable of undergoing photo-chemical oxidation in the presence of moisture and air; iodine and

* *Chemistry of Photography*, pp. 209-230.

potassium hydroxide are formed, and, of course, interact in the absence of some other iodine absorbent. A photo-salt is an iodine absorbent, and therefore, if a sheet of paper be coated with a silver haloid, and then exposed to light till it darkens, we have a surface capable of sensitizing a solution of potassium iodide, so that the latter undergoes photo-chemical oxidation with extreme rapidity, the liberated iodine being absorbed by the photo-salt, which thereby becomes bleached, *i. e.*, converted into the ordinary haloid.

Having brought the student up to this stage of knowledge, we must leave him in possession of a silver picture produced by development, and the chemistry of the subsequent operations of fixing, clearing, intensifying or reducing, printing, toning, and so forth, will be comparatively simple, after the course through which he is supposed to have been conducted. With regard to these subsequent operations, all that has to be borne in mind is that, after fixing and washing, the image is composed of a graduated deposit of metallic silver, and that all the changes that are wrought upon it by intensifiers or reducers are simply the result of ordinary chemical transformations. Thus the principle of intensification may be demonstrated in the usual way, *viz.*, by producing a design in silver on paper, as in the first lecture, then bleaching it by immersion in a solution of mercuric chloride, and, after washing, converting the mercurous chloride formed into the dark dimercurous ammonium chloride. The final result is a more opaque image—the latter has become intensified.

I have, perforce, been obliged to keep rigidly to my programme in this course of lectures; there has been no time for straying into by-paths, and I have confined myself strictly to the chemical aspect of the subject. I said, at starting, that it has also its physical side, and the special action of the spectrum colors on the different photo-sensitive compounds, the electrical phenomena accompanying development, the action of sensitizers in connection with orthochromatic photography, the subject of heliochromy, etc., must be included in every complete course of instruction in photographic technology. It has been my object to indicate the general lines on which this branch of technical training should be conducted; the teacher will, no doubt, discount the personal element from these lectures as far as he may think desirable; and, after he has done this, if he will conduct the student along the broad track toward which I have acted the part of a finger-post, we may call into existence a race of technologists who will raise the subject of photography to that high position as a science which it has already taken as an art.—*Journal of the Society of Arts.*

[From Photography.]

COLLODION AS A SUBSTITUTE FOR ALBUMEN IN POSITIVE PRINTING.

BY WALTER E. WOODBURY.

PART I.

THE fact that collodion is gradually but surely superseding albumen for the basis, as it were, to contain the silver salts used in positive printing is becoming more and more apparent. Perhaps in England the change will be slowly accomplished, but it is a fact that abroad they are making far more rapid strides ahead. With regard to the subject under discussion, perhaps America and Germany have made the most progress. Many photographers will have seen and admired the admirable aristotype pictures produced as supplements to the "International Annual," and elsewhere. Aristotype is but another name for positive printing in which the albumen is substituted by collodion. The advantages the latter possesses over albumen are manifold, and the processes of preparing the paper, printing, toning to the finished print are much simpler details; giving better and more permanent results (I say more permanent advisedly, but of that more later on). One of the chief reasons of its simplicity lies in the preparation of the paper. In the preparation of albumenized paper, sensitizing,

etc., several operations are necessary, with collodion only one. The time occupied in coating a sheet of paper with the sensitized collodion emulsion is less than required to sensitize a sheet of albumenized paper in the silver bath.

Having had considerable experience in the manufacture of collodion emulsion paper for positive printing, I am enabled to give to my readers instructions how to manufacture the same; they will also have the benefit of the knowledge that I have gained by experience.

I would advise all who are desirous of turning out good work to give it a trial, and they will find it far superior to any process in the market for making superb and highly-finished prints.

Like every other new process, the photographer will have a little difficulty in getting used to the working of it, but careful attention to the following instructions, which are rendered as clear and concise as possible, will no doubt be of great assistance, and enable him to get first-class results.

(To be continued.)

OBITUARY.

WILLARD H. FULLER.

WE regret to announce the death of our good friend, Willard H. Fuller, of the Scovill & Adams Company. He died at his home in Passaic, N. J., on Thursday, January 14th, at the age of thirty-seven, after an illness of about ten days. He was a native of Chicago, and came East about twelve years ago. In the town he had made his home he was sincerely respected and held a high social position, his loss being keenly felt by all classes of the community, old and young. He was one of the founders of the Passaic Free Library and first President of the Nineteenth Century Club of Passaic. He was also a member of the Board of Trade of the same town. The funeral took place at four o'clock on Sunday last, at the First Presbyterian Church, Passaic, N. J., the pastor, the Rev. Dr. A. P. Leavens, and the Rev. Mr. Whitehead, of the Second Reformed Church of Passaic conducting the services, the music being rendered by members of the Nineteenth Century Club.

Outside the members of his immediate family the following well known men were present at the funeral: W. Irving Adams, and H. Littlejohn, of the Scovill Co.; W. I. Lincoln Adams, of the *Photographic Times*; Henry Clay Price, Henry Flammeng, Dr. Charles Ehrmann, Col. V. M. Wilcox, of E. & H. T. Anthony & Co.; E. Wuestner, of the Eagle Plate Company, and members of the Board of Trade and Transportation of New York.

All that remains mortal of the deceased will be taken to Wisconsin, the home of the parents of the widow, where the latter and her two young daughters are to make their future home.

Every one who knew the departed one was charmed with his genial manner and marked gentlemanly character.

His quiet demeanor and pleasant face will long remain a happy memory to us. We tender his sorrowing family and business associates our sincere sympathy in their hour of bereavement.

GEORGE F. SCHREIBER.

This veteran photographer died at Philadelphia January 2d, and was buried January 6th.

He was a member of the firm of Schreiber & Sons, photographers, 819 Arch

street, and was well known to many of the older residents of the city. Mr. Schreiber was born at Frankfort-on-the-Main January 10, 1803, and served an apprenticeship to his brother, a publisher and printer, who published Schiller's first works. Subsequently he spent six years as principal of an academy at St. Petersburg, and fifty-eight years ago he emigrated to this country. Soon after his arrival in Philadelphia he published one of the first German newspapers—*The Old and New World*—and afterward associated himself with Frederick and William Langenheim, and, in connection with them, was among the first to produce photographs in America. This was in 1847, and the firm conducted its business in the old Philadelphia Exchange.

Although in his eighty-ninth year, the deceased was always in robust health and his faculties were unimpaired. He had an attack of the grippe, which caused his death. He was a great reader, and took a deep interest in the arts and sciences. Mr. Schreiber was the father of twelve children, ten of whom, seven sons and three daughters, survive him.

OUR ILLUSTRATION.

THE frontispiece of this issue of the BULLETIN is from a negative made by Mr. W. I. Scandlin, of our staff, during his summer outing. It represents an old fishing boat laid up at Gravesend Beach, L. I., for caulking and repairs. The picture was taken at about noon on a color-sensitive plate. We call attention to the detail in the distance, which is one of the marked characteristics of these plates.

ALUMINUM FLASH LIGHT.

The Editors of Anthony's Photographic BULLETIN :

I note in the editorial in your last number that: "Aluminum has been proposed as a substitute for magnesium in flash light photography, but we have yet to see results obtained with it. It appears to us that its ignition point is too high for this purpose."

In relation to the above would say that I exhibited pictures made with aluminum flash light at a meeting of the Society of Amateur Photographers three or four years ago, and a notice thereof appeared in the columns of the BULLETIN at the time. I do not know anything about its ignition point, but I do know that properly prepared aluminum is for certain purposes to be preferred to magnesium. It gives a quicker flash, and the only objection to its use that I know of is its high cost, about \$32 per pound.

Yours truly,

H. C. PIFFARD.

THE AMERICAN ARISTO PAPER is to be seen in use every morning at 591 Broadway, where Mr. F. J. Harrison gives demonstrations. Those of our readers who have not seen the results obtained with this new material will be well pleased with a visit to the above address. It is certainly the coming method for making positive pictures.

PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

Treasurer's Account.

GEORGE M. CARLISLE, Treasurer, *in account with the* PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

1891.

Dr.

| | | |
|---------|--|------------|
| Jan. 1. | Cash on deposit..... | \$2,328 22 |
| | Received from W. A. Davis (floor space)..... | 2,472 81 |
| | " 294 members, \$2.00 each..... | 588 00 |
| | " 192 " \$5.00 "..... | 960 00 |
| | " 214 public admissions, at 25c..... | 53 50 |
| | " Sale of 11 buttons, at 25c..... | 2 75 |
| | " Interest on deposits..... | 76 20 |
| | " Mr. Hawley..... | 50 00 |
| | " Mr. W. M. Knight..... | 20 00 |
| | | <hr/> |
| | | \$6,551 48 |

1891.

Cr.

| | | |
|-----------------------------|---|------------|
| Jan. 22. | Paid Draft No. 1, G. H. Hastings, expense to Executive Committee meeting..... | \$40 79 |
| | Paid Draft No. 2, W. A. Davis, expense to Executive Committee meeting..... | 35 65 |
| | Paid Draft No. 3, G. M. Carlisle, expense to Executive Committee meeting..... | 44 15 |
| Feb. 3. | Paid Draft No. 4, W. G. Stuber, expense to Executive Committee meeting..... | 53 00 |
| 10. | Paid Draft No. 5, J. P. Wright, printing receipts..... | 5 00 |
| 26. | " " 6, F. Gutekunst, certificates..... | 21 00 |
| | " " 7, S. L. Stine, Executive Committee expense..... | 46 76 |
| June 5. | " " 8, W. A. Davis, printing and postage..... | 83 51 |
| July 17. | " " 9, Mr. Carson (stenographer)..... | 125 00 |
| | " " 10, G. H. Hastings, rents and help..... | 400 00 |
| 18. | " " 11, W. A. Davis, on account Committee..... | 100 00 |
| | " " 12, S. L. Stine, expense account..... | 72 55 |
| | " " 13, S. L. Stine, expense account..... | 21 33 |
| | " " 14, W. G. Stuber, expense account..... | 74 75 |
| | " " 15, W. G. Stuber, expense account..... | 13 90 |
| | " " 16, Torsh & Lee, ladies' badges..... | 14 25 |
| | " " 17, Tiffany & Co. (bronze)..... | 170 00 |
| | " " 18, W. A. Davis, expense account..... | 68 75 |
| | " " 19, G. H. Hastings, expense account..... | 78 40 |
| | " " 20, G. H. Hastings, expense account..... | 97 98 |
| | " " 21, G. H. Hastings, expense account..... | 89 25 |
| | " " 22, W. A. Davis, on account Committee..... | 200 00 |
| | " " 23, G. M. Carlisle, expense account..... | 61 95 |
| | " " 24, G. H. Hastings..... | 167 50 |
| | " " 25, S. L. Stine, packing help..... | 7 95 |
| Aug. 7. | " " 26, J. Scott Hartley..... | 2,000 00 |
| | " " 27, J. P. Wright, stationery and printing..... | 4 50 |
| Dec. 1. | " " 28, W. A. Davis..... | 35 41 |
| 28. | " " 29, W. A. Davis, balance on percentage..... | 122 32 |
| | " " 30, G. M. Carlisle, 10 per cent. receipts..... | 422 32 |
| 31. | " " 31, J. Scott Hartley, balance on memorial..... | 518 00 |
| | " " 32, G. H. Hastings, balance on medals..... | 608 00 |
| | | <hr/> |
| | | \$5,813 17 |
| Balance to new account..... | | 738 31 |
| | | <hr/> |
| | | \$6,551 48 |

RECAPITULATION.

| | |
|-----------------------------------|-----------------|
| Total receipts, 1891..... | \$4,223 26 |
| Total expenditures | 3,295 17 |
| Net gain, 1891..... | \$ 928 09 |
| Cash on deposit Jan. 1, 1891..... | 2,328 22 |
| | <hr/> |
| | \$3,256 31 |
| Paid J. Scott Hartley, 1891..... | 2,518 00 |
| | <hr/> |
| Cash on deposit Jan. 1, 1892..... | <u>\$738 31</u> |

W. A. DAVIS *in account with* the PHOTOGRAPHERS' ASSOCIATION OF AMERICA.*Dr.*

| 1891. | FOR SPACE. | |
|----------|--------------------------------------|------------|
| July 15. | Received from J. Bryant..... | \$80 00 |
| | “ E. Wuestner..... | 81 37 |
| | “ L. W. Seavey..... | 52 50 |
| | “ Simpkinson & Miller..... | 27 12 |
| | “ Uhlman & Co | 78 75 |
| | “ Wilson, Hood & Cheney..... | 54 25 |
| | “ Bradfisch & Hopkins..... | 54 25 |
| | “ Rosenthal & Co..... | 78 75 |
| | “ G. Cramer Dry Plate Works..... | 162 75 |
| | “ Mr. Thompson..... | 60 00 |
| | “ Mr. E. A. Gilbert..... | 30 00 |
| | “ N. Y. Photogravure Co..... | 20 00 |
| | “ Lauden & Kent..... | 10 00 |
| | “ O. White | 27 12 |
| 16. | “ Fowler & Slater | 80 00 |
| | “ A. M. Collins Mfg. Co..... | 80 00 |
| | “ M. A. Seed Dry Plate Co..... | 81 37 |
| | “ F. Robbins..... | 30 00 |
| | “ Mr. Bowles | 20 00 |
| | “ Scovill Adams Mfg. Co..... | 25 00 |
| | “ Bausch & Lomb..... | 42 62 |
| | “ Air Brush Co..... | 20 00 |
| | “ Munroe Dry Plate Works..... | 10 00 |
| | “ E. & H. T. Anthony & Co..... | 153 12 |
| | “ Am. Aristotype Co..... | 105 87 |
| | “ Buffalo Dry Plate Argentic Co..... | 60 00 |
| 18. | “ P. H. Bonte | 42 62 |
| | “ W. M. Stone..... | 27 12 |
| | “ Tucker & Butts..... | 30 00 |
| | “ Packard Bros..... | 78 75 |
| 28. | “ Blair Camera Co..... | 422 37 |
| | “ B. French & Co..... | 80 00 |
| | “ Stanley Dry Plate Co..... | 60 00 |
| Aug. 27. | “ Eastman Co..... | 25 00 |
| 29. | “ Harvard Dry Plate Co..... | 54 24 |
| Oct. 29. | “ Acme Burnisher Co..... | 42 62 |
| Nov. 25. | “ Sweet, Wallach & Co..... | 85 25 |
| | | <hr/> |
| | | \$2,472 81 |

Cr.

| | | |
|----------|--|------------|
| July 15. | Cash to G. M. Carlisle, Treasurer..... | \$816 86 |
| 16. | “ “ “..... | 707 98 |
| 18. | “ “ “..... | 178 49 |
| 28. | “ “ “..... | 562 37 |
| Aug. 27. | “ “ “..... | 25 00 |
| 29. | “ “ “..... | 54 24 |
| Oct. 29. | “ “ “..... | 42 62 |
| Nov. 25. | “ “ “..... | 85 25 |
| | | <hr/> |
| | | \$2,472 81 |

Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.,
and a corps of practical assistants.

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Advertisements should reach us not later than the Saturday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, six, twelve or twenty-four issues.

E. & H. T. ANTHONY & CO., Publishers.

FINE weather and an attractive programme brought a large audience to the meeting of the above section on January 5th. Mr. Henry J. Newton occupied the chair and commenced the meeting by calling on the Secretary to report on "Communications."

Mr. Mason reported the receipt of several photographic periodicals and of a circular from the League of American Wheelmen offering a prize for the photograph best illustrating the terrible condition of the roads in the United States. The Secretary also exhibited two pictures of Niagara Falls, a present to the section from the Eastman Co. A vote of thanks for the above donations was accorded.

A sample of Rodinal was exhibited by F. J. Harrison, and results obtained by him described. He stated that probably all present had heard of the new developer, para-amidophenol. This substance had been imported from Germany in small quantity, but now was put up in liquid form ready for use upon diluting with thirty times its bulk of water. Mr. Harrison recommended it especially for

bromide paper, it giving perfect whites and brilliant blacks, which latter were similar to the blacks as produced by other developers when viewed while the paper was wet.

The new book, the "Photographic Image," by P. C. Duchochois, was exhibited by the same gentleman, and its perusal strongly recommended to all who worked at photography intellectually.

The chairman then announced that owing to illness Professor Elmendorf had been obliged to postpone his lecture, and that Dr. Bartlett would illustrate on the screen a camera trip from New York to the battle field of Waterloo. The doctor was received with much applause and his description of the various slides was much appreciated. The negatives from which the slides were made were taken with a small hand camera, and, if at times the perspective was decidedly off, the audience were apparently oblivious of it, being fully engaged in appreciating the pictures from a historic point of view.

Pictures of the White Star Dock and the *Teutonic* were followed by some excellent scenes on board. Mr. Kendal and wife and Mrs. Harrison and Mrs. McKee were shown as examples of life on the saloon deck, while the other extreme was illustrated by some admirable bits from the steerage end. Views around Queenstown, with the familiar jaunting car, succeeded, and after glancing at the Liverpool docks and hotels, the audience were carried to the old walled city of Chester. That this place abounds in food for the camera was evidenced by the picturesque bits shown on the screen. The old wall and the Cathedral made splendid pictures. On to Hawarden, Gladstone's residence, the audience traveled, the doctor giving a terse summary of the history of each place. Thence to Leamington and Kenilworth, where it would seem many a day might profitably be spent. In Stratford, Shakespeare's house and general views of the old town were shown, and then by a big jump through Oxford to London, Trafalgar Square, Houses of Parliament, St. Paul's, the Tower and the Albert Memorial were presented. Leaving England, views in Antwerp and Brussels were extremely interesting, especially the dog, flower and bird markets in this latter place. Views along the road from Brussels to Waterloo brought the audience to the famous battle field, and, with birdseye views of this, and pictures of the noted buildings in its vicinity, the trip ended.

A very hearty demonstration greeted Dr.

Bartlett at the close of his remarks, and a thoroughly pleased and satisfied audience dispersed at about 9.45 o'clock.

COLUMBUS CAMERA CLUB.

THE Columbus Camera Club held its last meeting of the year 1891 the evening of December 17th. This being the annual meeting brought out the largest meeting the club has had for the past three months. Many faces of irregular attendants were present. The formal action of presenting the Bausch & Lomb lens and shutter, together with the findings of the judges, was performed by the President. The recipient, Mr. H. Irvin, responded appropriately and passed around the cigars.

The officers for the past year submitted their annual reports, following which the election of those for the ensuing year took place, resulting in Mr. Perry Smythe, President; Mr. H. Irvin, Vice-President; Mr. W. B. Kimball, Secretary; Mr. C. S. Bradley, Treasurer, and Mr. E. Hoffman, Librarian.

The thanks of the club are here extended to the publishers of the BULLETIN for their valuable periodical, which contributes so much to the photographic welfare of the members.

After meeting adjourned the newly elected President escorted the members to a banquet room, where the season's supplies to the inner man were furnished. After exchanging stories and jokes all departed for their homes well satisfied that they had chosen wisely in electing Mr. Perry Smythe President.

Monday evening, December 21st, Wells Post Hall was filled with the friends of the Columbus Camera Club to enjoy their sixth public entertainment, "Yosemite Valley." The lantern in the hands of Mr. Walter Brown pictured on a large screen these magnificent photographic representations of one of nature's grandest works, while the interesting lecture was clearly delivered by Mr. F. H. Howe.

The audience highly appreciated this meritorious entertainment, a worthy example of the commendable work our camera clubs are engaged in. The California and Columbus Camera Clubs have the thanks of their many friends for this enjoyable evening.

J. N. BRADFORD.

PATENTS IN 1891.

THE number of patents applied for during the year just ended was over fifteen hundred

more than in the year before, which was much in excess of any previous one. Last year the actual number was twenty-two thousand eight hundred and seventy-two. As yet the numbers are not classified, but, to judge from the lists that have appeared weekly in our columns, the applications in connection with photography will show a considerable increase over all previous years. What a marked difference there is in the number of applications for photographic patents now and in former times! Going back, say, twenty years—that is, 1871—we find the total number of patents, directly and indirectly connected with photography, applied for, was only twelve for the whole year, a few more than are sometimes applied for in a single week now. Are photographic inventors more mercenary now than they were formerly? It would certainly seem so. Now, any little improvement or modification appears to be made the subject of patents. In former days it used to be freely given away, and this was the case with all the most valuable inventions in connection with the art.—*British Jour. Photog.*

Bibliography.

THE BRITISH JOURNAL OF PHOTOGRAPHY
ALMANAC FOR 1892. New York: E. &
H. T. Anthony & Co., 591 Broadway.

This well known and tried annual is again before us. It covers over 1,160 pages, about 400 of which are photographic articles by all the best writers of the world, the balance of the pages being advertisements. As usual, it is beyond question one of the best investments in photographic literature that we know of. Under the able editorship of Mr. J. Traill Taylor it has become a standard work of the highest order.

THE YEAR-BOOK OF PHOTOGRAPHY, 1892.
New York: E. & H. T. Anthony & Co.,
591 Broadway.

This ever welcome annual appears with a new editor, Mr. T. C. Hepworth, at the helm. As usual, it is a handy compendium of photographic progress, and should be in the library of every thinking photographer. It has about 250 pages of photographic articles and about 150 pages of advertisements. Not the least valuable of the photographic information it contains is a description of the novelties in apparatus during the past year. Its reasonable price places it within the reach of all.

TRAITEMENT DES RÉSIDUS PHOTOGRAPHIQUE. Par Maurice Peligot. Paris : Gauthier-Villars et Fils, 1891.

When the enormous quantities of the precious metals used in connection with photography is considered, it becomes a wonder why more attention is not paid to the recovery of gold and silver from photographic wastes. This little pamphlet treats most briefly and concisely of the best methods for treating these wastes, and even the amateur will find that the savings from his scraps will more than repay the labor of working them up, and a perusal of this excellent little work will show him how to do so with but little trouble to himself.

MANUEL DE FERROTYPÉ. Par Henri Gauthier-Villars. Paris : Gauthier-Villars et Fils, 1891.

This little pocket manual is almost a plea for the existence of the ferrotype. It does not attempt to defend the outrageous semblance of humanity, so often miscalled likenesses, with which we are all familiar ; but, on the contrary, condemns them. What it does maintain—and successfully, too—is that a good tintype is a possibility ; and practice and an adherence to the rules herein laid down put it within the grasp of the reader.

The book's motto seems to be, "Read me, try me, tell me if I'm wrong."

LES NOUVEAUX PROCÉDÉS DE TIRAGE. Par L. Mathet. Paris : Société Générale d'Éditions, 1891.

This is a timely little issue of 130 pages on the new processes of printing. It is divided into four chapters, which discuss respectively : Printing with salts of silver in collodion or gelatine emulsions, by means of various metallic salts, by means of colorless powders incorporated in gelatine, and by means of colored inks. The frontispiece is a creditable piece of work on an orthochromatic plate. The descriptions are somewhat verbose, but on the whole the book is well worthy of perusal.

GESCHICHTE DER PHOTOGRAPHIE. Von C. Schiendl, Wien Pest. Leipzig, 1891: A. Hartleben.

In this admirable work the history of photography is traced from its infancy down to the present time, beginning with the early researches on the action of light, and tracing the development of the various processes, both historically and in detail ; the niepceotype,

the daguerreotype, paper negatives, the collodion, emulsion and various photo-mechanical and printing processes, closing with the diazotype and primaline process of Feer and Green.

The work is of a popular character, the subjects are well and interestingly handled, and it fills a want hitherto existing in German literature. It is a large 8vo of 375 pages, and both print and paper are most excellent.

GESCHICHTE DER PHOTOCHEMIE UND PHOTOGRAPHIE. Von Dr. Josef Maria Eder. Halle a. S., Wilhelm Knapp, 1891.

This valuable work is fittingly introduced by fine helio-photogravures of Niepce, Daguerre, Fox-Talbot and Schulze. It is marked throughout by unusual excellence and is fully on a par with other recent valuable productions by the same able pen.

The present volume carries us from the earliest times through to the discovery of the heliograph and daguerreotype by Niepce and Daguerre, discussing in an able and thorough manner through its 150 large octavo pages the slow and painful steps of the earlier workers on the action and composition of light, and of its effects on organic compounds, concluding with an equally able discussion of the various successes and failures of the two Niepces (father and son), and Daguerre.

The volume is full of valuable references in which the original authors' papers are referred to, and the work is essentially a standard one. When completed it will be one of the classics of photographic literature.

TRAITÉ ÉLÉMENTAIRE DE L'OBJECTIF PHOTOGRAPHIQUE. Par E. Wallon. Paris : Gauthier-Villars et Fils, 1891.

To those who wish to make themselves familiar with the theory and construction of their lenses, rather than to take the maker's word that this objective is aplanatic, this one achromatic and so on, this book is especially addressed. It is a somewhat elaborate and mathematical treatise on the elementary laws which govern the construction of photographic objectives and as such it is most excellent. It is a volume of some 300 large 8vo pages, fully illustrated by cuts, diagrams and formulas, and is a most desirable addition to any really scientific photographic library. Starting with the laws of refraction, the author defines the difference and treats of the refraction in a single lens and in an objective, then aberration and its effects is taken up, next correction of aberration, the different types of objectives and their study. The second part treats of refractions produced by spherical surfaces and

a system of spherical surfaces, the different kinds of lenses, and their combinations, aberrations, etc.

PHOTOGRAPHISCHER ALMANACH UND KALENDER für das Jahr 1892. Düsseldorf : Ed. Liesegang's Verlag.

This useful little volume is fully up to the high standard maintained in its previous editions.

The subject matter is attractive, well written and well printed. The collection of tables and formulas will be found very useful and their arrangement with space opposite for the user's comments is a happy one.

The portrait of Ottomar Anschütz, the eminent German exponent of instantaneous photography, appears opposite the title page.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. Correspondents will please remember this. No attention will be paid to anonymous communications.

Q.—W. W. K. writes: Can you inform me where I can have made a transparency or transparent plates? These are to be used under a strong lens. What I want to get is a fair size picture reduced to a very minute one and magnify it under this lens. Shall want thousands of these plates. Could I have three distinct views on different parts of the plate? What should the price be in 1,000 lots?

A.—We do not quite understand your question. Almost any of the large makers have special brands of plates adapted for transparencies, and these are for sale by any photographic dealer, from whom you could obtain prices for the desired quantity. If you will write us more fully, we will, perhaps, be able to answer your question satisfactorily.

Q.—J. J. P. writes: 1. Is the "collodiod-chloride" paper manufactured by the American Aristo Company, of Jamestown, N. Y., and their ordinary "Aristo" paper, as advertised in the BULLETIN of December 12th, one and the same thing? I mean: Are they two different kinds of paper; or do both names mean only one kind of paper? 2. Is "Omega" paper the same as that made by the Bradfisch Aristotype Company of Brooklyn, N. Y., under the name of "Bradfisch's

Aristotype Paper," some two or three years ago? 3. If the Bradfisch Company still exists, can you give me its present address? Also the address of the manufacturers of "Omega" paper? 4. Is Heuermann's "chloride emulsion" paper (manufactured by W. Heuermann, New York) a collodiod-chloride or a gelatino-chloride paper?

A.—1. We were not aware that the American Aristotype Company were manufacturing a brand of paper designated "collodiod-chloride," and consequently are unable to give you the information you desire on this subject. 2 and 3. The "Omega" paper is made by Bradfisch & Hopkins, Brooklyn, and by writing them you will best be able to ascertain the points of difference between the two brands you mention, both of which they manufacture. 4. We are not acquainted with this brand of paper.

*Q.—H. A. E. writes: Would you publish in your next "Annual" what license is required of photographic artists in different States of the United States? In Maryland and West Virginia, also the District of Columbia, no license is required. The law of West Virginia states that where the State does not levy a tax, municipal towns *shall not*; but some of them do, and the traveling photographers pay it sooner than stand an expensive lawsuit. The State of Virginia charges a tax varying from \$20 to \$50, each county a road tax of from \$6 to \$20, and incorporated towns whatever they see fit. The law of Virginia says, that after paying State tax at one place, the photographer shall pay \$5 additional for each additional city or county in which he works; but the collectors hold that if he takes his first license in a \$20 district, then moves into a \$50 district, he must pay \$30 more.*

A.—We are not in possession of the information you require, but would suggest that you write to the Secretaries of State of such States as you wish to know the license fees of, and they would undoubtedly inform you of the special statutes bearing upon this subject. Another way would be to consult the different State laws in some good public law library.

Q.—C. M. F. writes: I would be pleased to have you inform me what American firm of opticians, as mentioned on page 764 of the December 26, 1891, BULLETIN, will manufacture the new and wonderful lens therein mentioned, as I am contemplating the opening of new photo rooms soon. I don't want to be behind the times.

A.—The information which you request was given to us in a private communication, and

we do not feel at liberty to divulge it. Otherwise we would be most pleased to answer your query. As soon as we are permitted to do so, an announcement will be made in the pages of the BULLETIN.

Q.—E. E. R. writes: Will you kindly state in the BULLETIN a remedy for taking out the mottling of a negative that has through accident been left in the hyposulphite fixing bath for about twenty-four hours? Occasionally I have gone home on Saturday night and left one or two negatives in fixing bath, and on Monday morning they would be so badly mottled as to necessitate a resitting of the subject.

A.—There are so many different kinds of mottling that we are in considerable doubt as to just which one you refer to, and for this reason hesitate to answer your question without fully comprehending it. If you will send us one or more of the negatives which have troubled you, we can perhaps get at the root of your trouble and advise you as to how to remedy it.

Views Caught with the Drop Shutter.

WE have received a handsome New Year card from MESSRS. T. C. SHAPE & Co., the well known photographic merchants, of Milwaukee, Wisconsin. We cordially acknowledge its receipt, and in return send them our best wishes, with all the compliments of the season.

WE learn with pleasure that the INTERNATIONAL ART PUBLISHING Co. have re-

moved their office and sample room to the Domestic Building, 853 Broadway, Room 47, where they announce a fine line of photo-gravure and gelatine work. THE HELIO-TYPE PRINTING CO. of Boston have also taken an office in the same room, and will be well represented in their beautiful lines of process work.

The Photographic Times sends us their handsome calendar for the coming year. As usual it is appropriate in design and an ornament to our office. We tender our best thanks for the kind remembrance.

WE have received the following announcement, which explains itself:

ROCHESTER, January 6, 1892.

On the 1st inst. Mr. Henry Reichenbach, Dr. S. C. Passavant and the writer severed business connections with the Eastman Company of this city. We intend to engage in the manufacturing business on our own account. I have made and perfected what experts have pronounced as a very valuable invention in photography, which with some other photographic specialties will be what we will manufacture for the trade. Announcement will be made at an early date through your very valuable journal.

G. W. MILBURN.

MR. FRANK PICKERELL, the well known demonstrator of Chicago, gave us a call the other day. He is apparently as bright, cheerful and enthusiastic as ever, and bids fair to last for many years as one of the beacon lights of dry-plate photography.

TABLE OF CONTENTS.

| | PAGE | | PAGE |
|--|------|--|------|
| ALUMINUM FLASH LIGHT, <i>by H. C. Piffard</i> | 57 | ON THE EXPOSURE TIME, <i>by T. C. Duchochois</i> | 46 |
| AMERICAN INSTITUTE—PHOTOGRAPHIC SECTION..... | 60 | OUR ILLUSTRATION..... | 57 |
| BIBLIOGRAPHY..... | 61 | PATENTS IN 1891..... | 61 |
| COLLODION AS A SUBSTITUTE FOR ALBUMEN IN POSITIVE PRINTING.—PART I, <i>by Walter L. Woodbury</i> | 55 | PHOTOGRAPHERS' ASSOCIATION OF AMERICA..... | 58 |
| COLUMBUS CAMERA CLUB..... | 61 | PHOTOGRAPHIC CHEMISTRY (<i>continued</i>), <i>by R. Meldola, F.R.S.</i> | 51 |
| COPYING BOOK ILLUSTRATIONS AND OTHER SIMILAR SUBJECTS BY MEANS OF ARTIFICIAL LIGHT.—VII, <i>by T. N. Armstrong</i> | 50 | SILVER PRINTING, <i>by Ellerslie Wallace</i> | 41 |
| EDITORIAL NOTES..... | 35 | SIMPLE EMULSION MAKING..... | 33 |
| LETTER FROM GERMANY, <i>by Dr. H. W. Vogel</i> | 38 | TONING LANTERN SLIDES WITH URANIUM SALTS, WITH REMARKS ON THE COLOR OF SLIDES IN GENERAL, <i>by Alfred Stieglitz</i> | 47 |
| OBITUARY..... | 56 | VIEWS CAUGHT WITH THE DROP SHUTTER..... | 64 |
| | | WHAT OUR FRIENDS WOULD LIKE TO KNOW..... | 63 |

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BY

M. A. C. CHICAGO.

ANTHONY'S Photographic Bulletin.

EDITORS :

PROF. CHARLES F. CHANDLER, PH.D., LL.D.

PROF. ARTHUR H. ELLIOTT, PH.D., F.C.S.

VOL. XXIII.

FEBRUARY 13, 1892.

No. 3.

THE ALKALIES USED IN DEVELOPMENT.

THE various alkaline salts used in the practice of modern dry plate photography, are often very little understood in regard to their action, more especially as to their condition and impurities. Therefore we are led to believe that a general statement of their characters and relative action during the process of development may prove useful to a number of our readers.

Beginning with soda salts, we note first that they are found in commerce in several forms or conditions, and these forms have a very great difference in their action in the alkaline developer. By far the most common salt used in the developer is what is called soda crystals. In this case we have a body containing sodium carbonate crystallized with a large quantity of water. The actual quantity of sodium carbonate in the pure crystals is 37 per cent., the other 63 per cent. being water. But much of the soda crystals found in commerce are used for scouring purposes, as washing soda, and often contain other salts of sodium as impurities, as, for example, sulphate of sodium. In this case the available sodium carbonate is less than 37 per cent. A small quantity of sodium sulphate may be without any serious influence upon the development; but if much of it is present it makes the developer weaker than it should be if made up according to the formula given with many of the modern brands of dry plates, and the results obtained by the maker of the plates cannot be obtained by the photographer. Yet another difficulty with these soda crystals is the change they undergo when exposed to the air. Pure crystals of sodium carbonate have a bluish, semi-transparent appearance, which on exposure to the influence of the air will change to a white powdery coating, from the loss of water by the crystals.

This loss of water by the crystals increases the amount of sodium carbonate in them, and may continue until they are entirely converted into powder which contains 85 per cent. of sodium carbonate, or two and one-third times as much

as the original crystals. It would, therefore, appear that the dry powder is the most desirable material to use as sodium carbonate, since the crystals may constantly undergo change and cause variations in the character of the developer. The granulated sodium carbonate sometimes sold is the same strength as the powder from the crystals. We would suggest that this last material be always specified in the formula given by the dry plate makers with their boxes of plates. If it cannot be obtained it can easily be made by putting some soda crystals into a common tin baking dish and heating in an ordinary range oven, at the same time stirring the material, which at first melts, then thickens, and finally granulates.

Another form of sodium carbonate that may be used in the developer is called soda ash, and when it is clean it is nearly pure sodium carbonate.

To give an idea of the relation of these different varieties of soda used in the developer, we will compare them on the basis of one ounce of crystals of sodium carbonate :

Crystals, 437.5 grains (1 ounce) = granulated, 190 grains (3 drams $\frac{1}{2}$ scruple) = soda ash, 162 grains (2 drams 2 scruples).

Ordinary baking soda used in the kitchen may also be used as a substitute for the soda crystals in the developer, provided it is first heated in an oven for some time. This latter is sodium bicarbonate and when heated as stated will give the purest sodium carbonate that can be obtained in commerce, but the heating must be continued for some time (say half an hour) in a hot oven ; it is then equal to soda ash as given above.

Caustic soda or sodium hydrate is sometimes used in the developer, as, for example, with hydroquinone ; in this case a quantity equal to only one-third the weight of the soda crystals is necessary. But here also the purity of the caustic is most important, as it often contains much carbonate. This latter impurity may be detected by dissolving some of the caustic in water and adding an acid to the solution ; if it effervesces more than very slightly it is unfit for use.

Potassium carbonate is not an uncommon constituent of the developer. This salt is just as uncertain in its quality as the soda crystals, and requires as much care in its use. The purest variety of potassium carbonate is called salts of tartar and is the best kind to use if chemically pure carbonate is not at hand. This latter is too expensive as a rule and the salts of tartar answers every purpose in photography. The impure varieties of potassium carbonate contain chloride and sulphate in considerable quantities, and are usually unfit for use in developing.

In using potassium salts in developing, the softening effects of these compounds on the gelatine film must always be remembered. As a rule one-half the weight of potassium carbonate will replace the soda crystals. But the character of the developing agent will make some difference to this proportion, which only holds good for hydroquinone or eikonogen. With pyrogallol this proportion must be reduced very considerably.

Since the advent of para-amidophenol two other alkaline salts have come into notice more prominently than before; these are the carbonate of lithia and caustic lithia. While we cannot recommend these salts for the general use of the photographer, we do think there is much to be learned from their use in experimental work, where their high cost does not exclude them. Like the carbonate of sodium and caustic soda, the carbonate and caustic lithia act cor-

respondingly. The carbonate can be used in solutions containing not more than one part in one hundred and thirty, which is the limit of its solubility in cold water ; this is about three and a half grains to the ounce of water. With caustic lithia this may be increased, owing to its greater solubility, and with the para-amidophenol, instead of using an amount of carbonate of lithia equal to the weight of the phenol, less than one-half is found sufficient when caustic lithia is used. As compared with caustic soda it is five times as effective, and it is six times as strong as caustic potash, at least in the case of the para-amidophenol developer. It would prove interesting to compare its action as an alkali with other developers such as hydroquinone and eikonogen. Should it prove of any special advantage, its cost of manufacture could be greatly reduced if made in large quantities. At present its high price excludes it from general use.

EDITORIAL NOTES.

A PARA-AMIDOPHENOL developer of great energy is recommended by Dr. Eder, who uses the following formula : Potassium meta-bisulphite, thirty parts, dissolved in boiling water, five hundred parts, and ten parts para-amidophenol chlorhydrate is added; after which, sufficient caustic soda is slowly added to redissolve the precipitate. For use, only one part of the solution is required with fifty parts water.

NEW camera clubs are springing into existence rapidly all about us, Boston, Wis., having lately organized one, also Lowell and Pittsfield, Mass., and Omaha, Neb., is just forming one among her workers ; another is in contemplation in Augusta, Ga., and the Hiawatha Camera Club of Minneapolis has completed its organization with Dr. M. G. Jennison, President; J. W. Bell, Vice-President; C. A. Hoffman, Secretary; and G. B. Eustis, Treasurer. Success attend them all !

THE recent competition for honors of 1891 by the Photographic Society of Philadelphia has closed, and the holders of the honors are announced as being Messrs. William H. Rau, Robert S. Redfield, Dr. Charles L. Mitchell and E. L. Miller. The exhibition was of great interest and merit.

WE are in receipt of a print from Mr. W. E. Hall, of Havensville, Kan., made on American Aristo paper and toned with soda acetate, which shows a beautiful warm brown tone which it would be very difficult to excel with any toning solution that we know of. Mr. Hall writes that he has had no instruction in the manipulation of the paper, and that the print in question is his third experiment only.

WE express our thanks for invitations received to attend the recent exhibition of the California Camera Club, and regrets at our inability to be present.

A NEW magnesium lamp, of special use in enlarging processes, has lately been invented by M. Dronier, which he claims will burn for twenty-four hours steadily and consume only 617 grains of magnesium per hour. The light is said to be of great strength and quality, the cost of plant small, and no danger from fire.

THE fourth exhibition of the Boston Camera Club is the most interesting one they have given, over six hundred pictures being hung. Messrs. W. A. French, B. Kimball and G. W. Morgan are said to have presented the finest specimens of work, which, in a collection of that size, is no mean praise.

THE Hartford Camera Club will give its fifth public exhibition on the 23d inst., a private view being afforded the club on the evening previous, which will be followed by supper. A finely illustrated catalogue will be a feature of the exhibit.

THE General Committee on the Congress of Photographers at the World's Fair is announced to be made up of the following gentlemen: Chairman, James H. Bradwell; Vice-Chairman, Gayton A. Douglass, and Messrs. C. Gentile, Max Platz and M. J. Steffens.

THE twenty-fourth exhibition of lantern slides was given last month by the New Orleans Camera Club and was much enjoyed by the large audience that witnessed it.

A VERY interesting paper on the making of lantern slides was read by Miss Catharine Weed Barnes, before the Brooklyn Academy of Photography, on the 21st ult., which was followed by a practical demonstration of slides made by her own methods.

REGARDING the question of the possibility of a toning bath for albumen prints being successfully used for gelatino-chloride papers, some experiments recently conducted in England tend to show that the acetate bath works beautifully, which agrees well with the results of Mr. Hall's work previously alluded to.

THE commodious and elegant new apartments of the Photographic Society of Philadelphia were formally opened to members and their guests on the 21st ult. We would express our thanks for an invitation to the opening and regrets at our enforced absence. From the reports which have reached us, the society is to be heartily congratulated on its success.

A PROCESS has just been invented by F. Winterhoff, of Cologne, for the production of a printing plate of glass, that will be of interest to lithographers and process men generally. It consists in coating a glass plate with sensitized asphaltum or gelatine, drying and then transferring to its surface with well prepared lithographic transfer paper the desired print, and dusting it with any bronze powder, after which the plate is cleaned, exposed to sunlight for half an hour and washed with turpentine, which removes the gelatine or asphaltum in such places as have not been affected by the light thus leaving a basis of clear glass except where the picture is to be, and the line work of the picture protected. It is then etched in fluoric acid for about half an hour, cleaned, and is ready for use.

AN old friend and subscriber of the BULLETIN suggests the importance of having a good set of views both distant and in detail of the Island of San

Salvador, the first land of the New World discovered by Columbus, exhibited at the World's Fair—and hopes that if they are provided, they may be assigned a position at the very entrance of the Art Department. We hope to see such a collection and have no doubt that some one or many will produce it.

WE would acknowledge with thanks the receipt of a most interesting pamphlet from the hands of Prof. S. W. Burnham, M.A., of the Lick Observatory, on the measures of planetary nebulae with the 36-inch equatorial of the observatory, with corrections and additions to the observations of Sirius.

THE Lynn Camera Club gave, on the 22d ult., a very interesting exhibition of slides from scenes made famous in history by the ride of Paul Revere, with a lecture descriptive of his life and kindred topics. The club is in a flourishing condition, and the officers for the present year are: President, W. M. Drew; Vice-President, J. M. Smith; Secretary, W. W. Griffin; Treasurer, E. F. Batcheller.

THE officers of the New York Camera Club for 1892, elected January 13th, are as follows: David Williams, President; Samuel W. Bridgham, Vice-President; Harry B. Reid, Secretary; Robert J. Devlin, Treasurer. A new constitution and by-laws were adopted.

WE note the appearance of New Series No. 1 of "Astronomy and Astrophysics" for January, 1892, which is remarkable for the high character of its articles and illustrations. It contains two interesting articles on spectrum analysis by Professor E. C. Pickering of Harvard Observatory.

THE membership of the California Camera Club has been augmented by the joining of about forty members of the Pacific Coast Amateur Photographers' Association, lately disbanded.

THE Schuylkill Camera Club have elected the following officers for the coming year: President, Professor S. A. Thurlow; Vice-President, Miss Elena Roads; Secretary, Professor B. F. Symons; Treasurer, W. L. Schaefer.

LETTER FROM GERMANY.

BY DR. H. W. VOGEL.

The Transportation of Amateur Apparatus.—The Camera and the Eye.—New Platinum Bath.—Miethe's Teleobjective.

THE manner of transporting photographic apparatus has repeatedly been discussed in the journals. It is certainly of some importance, out-door photography being attended with more or less difficulty according to the facility of transportation. Many "hand cameras" are left at the hotel after an hour's walk with the remark: "That box has made me tired." There is some truth in this. I have tried it myself. The camera is sometimes carried in a satchel or carrying case on straps over the shoulder. I have marched in this way for two hours without any inconvenience. Dr. Krügener has such a satchel connected with his hand camera. Other dealers, however, ignore these carrying cases

entirely. This is decidedly wrong, and the camera should be furnished in a good transportable condition. The dealer is mostly a mechanic, and he treats, therefore, the saddler-work of the satchel as something secondary. This should not be, and we recommend also to divide the inside of the satchel or carrying case into three parts, one for the camera, one for the objectives and the third one for the changing box for films. It should also be provided with lock and key. The objectives may be wrapped up in the focusing cloth. I have traveled lately with such a changing box for films, and find that the immense reduction of weight, as well as the fact that the films have no black edges, are advantages not to be denied. Plates I have discarded entirely, although there is more difficulty in developing and fixing the films.

For instantaneous work I generally use a detective camera.

For some years the photographic camera has been compared with the eye, and the opinion prevails generally that they are strikingly alike. Still attention has been called to some very important differences. In my photographic handbook, as well as in Schröder's treatise on photographic optics, it is shown that both, eye as well as camera, possess a lens, depicting pictures, but that the perspective plane, which catches the pictures, is spherical in the eye and plane in the objective.

I based upon this my theory of perspective distortions, which I demonstrated twenty years ago in my handbook of photography. All arguments, that all pictures taken with too large a visual angle appeared still correct, if looked at only from the distance of the focal length of the lens, are futile. No picture taken with 90 degrees visual angle is looked at from a distance of half its length. Every sensible person selects a standpoint at least twice as long as the picture; but the perspective distortions will then distinctly appear.

But other very important differences exist still between camera and eye, to which very little attention has been paid heretofore.

Look at a picture, as furnished by the eye upon a prepared retina, for instance a window, the same will show an awful distortion—the straight lines bent outside, barrel shaped. Eder's photography of the picture of an eye demonstrates the same. Still we see the lines of a window absolutely rectilinear.

There is therefore a considerable difference between eye-picture and camera-picture (with single lens). Actually the barrel-shaped distortion is given by both, and still we perceive the curved lines, which are seen by our eye, as straight ones. This peculiarity has to be explained. We first call attention to the fact, that the lens of the eye is partly a bad one. A tolerably good photographic lens covers with full opening certainly one-tenth of its focal length sharply. The lens of the eye, on the contrary, shows only one point sharply of about one one-hundredth of the focal length extension. If we want to see an object distinctly, we let the eye move in its fatty cavity. By a muscular motion the eyeball is turned in such a way that gradually it will be directed to all points of the object.

We see everything with the centre of the visual axis, and the facility with which the eye moves in its cavity and surveys all points of an object, is really astonishing and inimitable.

The poverty of the optical system of the eye is balanced by its wonderful mobility, which no photographic apparatus can imitate. Thus a picture which we perceive is composed of impressions successively taken up by our retina

and combined. The eye sees a number of globes ; directing its axis upon each of the same in rotation, every one will appear absolutely circular. A straight line is seen by the eye, by looking gradually at every point. The muscular movement necessary for this governs our senses to perceive whether the line is straight or not. The photographic lens lacks not only the curved picture surface, but also the wonderful mobility of the eye. Thus we can see from an express train all details of the landscape through which we pass, excellently, on account of the mobility of the eye. The jarring of the train does not interfere. If an opera glass is used, the situation will change, everything will dance in front of the eye.

The different formulas for platinum baths, which have been published so far, have all the disagreeable property of possessing very little durability. The chloride of sodium giving to the chloride of platinum salts the necessary durability for toning, I have applied the following formula with advantage:

| | |
|-------------------------------|------------|
| Chloro-platinite of soda..... | 2 grams. |
| Bitartrate of soda..... | 1 " |
| Chloride of sodium..... | 4 " |
| Distilled water..... | 1,000 c.c. |

The tartaric acid is for the purpose of acidifying the bath faintly, as the toning will not be effective in an alkali bath.

The bath has an unlimited durability without losing its properties, and is suitable for salted paper, gelatine papers, etc. The bath is applied like a gold bath, which it replaces with advantage; it is sufficient to have the pictures (after previous washing) in the same until the desired tone has been obtained. The picture will first be of a purple tone, then brownish purple, sepia brown, and finally of a brilliant black. The latter is the finest tone to be attained.

The prints should be taken from the bath before the toning is finished. They become darker in drying, and if they remain longer in the toning bath they will give gray, cloudy and dull prints.

After toning and washing, fix with 15 per cent. soda, and wash thoroughly; after drying, handsome prints in effective, black tones will be found.

I have already written to you about the new Miethe objective for near and distant objects, and that gentleman has, in the meantime, made some surprising views with the same. As, for instance, one picture of 9 centimeters size, with the ordinary aplanat, and the same picture taken with the teleobjective. In the first picture it takes a space of 1 centimeter, and in the second picture it appears nine times as large, so that at distances of 1,000 feet the tiles on the roof, signs, etc., appear distinctly visible. But the best of all is that the enlargement can be varied.

BERLIN, January, 1892.

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[From our Special Correspondent.]

ENGLISH NOTES.

OUR oldest photographic weekly, the *Photographic News*, appears to have taken a fresh lease of life under its new editor, Mr. T. C. Hepworth, F. C. S. The number for January 15th contains an important article on "Composite Photography ; a New Method," by Mr. Jerome Harrison. Portraits (full face for choice) are taken on thin celluloid films in a camera ; the scale being such that the distance between two horizontal lines, one drawn through the pupils of

the eye and the other through the mouth, is exactly half an inch. The negatives being then placed one upon the other, a compound negative is obtained, from which prints can be taken. But, Mr. Harrison recommends, in preference, that a print upon thin celluloid be taken from each negative. These positive prints can then be superposed in any order or number that we please; and, when viewed by transmitted light, a compound positive is always obtained.

It will be seen that the new method consists in the interchangeability of the individual items of which the composite is built up. The thin films can be "shuffled like a pack of cards," and any number of combinations can be tried.

The plan is extremely simple and easy, and most interesting results are obtained from the combination of the portraits of the several members of a family.

The octogenarian President of the Photographic Society of Great Britain (Mr. James Glaisher) has at length made up his mind to retire. He will probably be succeeded by Captain Abney. The society has lately been showing some signs of life, but it is to be feared that its best opportunities have been allowed to slip by. The Photographic Exhibition at the Crystal Palace, which for the last few years has been a feature of the spring months, will not be held this year, or, if held at all, not till November. This leaves the Birmingham Photographic Society in continued possession of the National Challenge Cup, which has been won by the famous "hardware village" workers on the only two occasions (1890 and 1891) when it has been offered for competition among the photographic societies of the United Kingdom.

Another photographic periodical, the *Photographic Review of Reviews*, a six-penny monthly, is announced as "now ready." From its name it would appear to be a "scissors and paste" sort of compilation. The photographic literature of the present day or at least a considerable part of it is curious stuff! In some papers we actually find advertisements printed in the most prominent parts between the letter-press; then long lists of competitions, society fixtures, dates of exhibition of lantern slides, etc., etc., take up column after column. And instead of paying competent writers to contribute fresh matter, we get a wearisome copying of papers from other journals published in the same country. What is wanted is more originality and less padding.

In the matter of isochromatic plates, Messrs. B. G. Edwards & Co. have hitherto held sole control in this country, under the patent of Attout-Tailfer. But they have recently licensed the Ilford Company to make the same plates, and they have further reduced the price to the same figure as for good ordinary plates. Moreover, Messrs. Edwards now manufacture isochromatic celluloid films at the same price as plates. This is a considerable advance, and should lead to an extended use of "color-sensitive" surfaces during the coming season.

Many workers seem to think that isochromatic plates require some very special treatment. Of course much depends on a man's ordinary method of working. I use a large "Perfection" candle lamp, which gives a flood of ruby light, thrown downward by a reflector upon the dish containing the developing solution. I should never think of developing without the aid of dish covers, by which the plate is protected from the light during the greater part of development. For isochromatic plates I simply wrap a couple of sheets of brown tissue-paper round the ruby lamp, so that while filling my dark slides and during the

first stages of development the plate receives very little light indeed. But I remove this tissue paper when the image has once begun to show itself, and by lifting up the cover from over the developing dish I take occasional glances at the plate until it is finished. Isochromatic plates, treated in this way, have furnished me with the most brilliant and "fog-free" negatives which I possess.

During the last few months a mild rage has sprung up for bromide prints toned brown or sepia by means of uranium. It ought to be known that the permanency of such prints is, to say the least, uncertain. Two printing processes, platinum and carbon, can lay claim to undoubted permanence. Next to these we get the ordinary developed bromide print. But after all, the "permanence" lies as much in the hands of the operator as in the process. There are plenty of common silver prints thirty years old in existence, and as fresh as on the day they were made. And there are also plenty of ugly looking yellow platinotypes and bromides to be found (if one cared to look for them) which came into existence not many months ago.

So, again, in the "carbon" process. Pure carbon is black. But we see plenty of red and of brown "carbon" prints. These have no right to the name; for the color is due to some other pigment having been substituted for the powdered carbon. Yet many people believe that all pictures must be permanent which are called carbon prints.

It looks as if transparent thin celluloid might be successfully employed in the carbon process. One drawback with carbon printing has always been the necessity for a double transfer of the picture. Now, by transferring the picture once only to a sheet of celluloid, it is at once seen in its natural position by looking at it through the celluloid; and the second transfer is not needed.

Our plate makers and all who use methylated spirit are being much hampered by a Government regulation lately promulgated, to the effect that this liquid must in future have added to it a certain proportion of paraffin! The object of this is that methylated spirit shall not be used as an intoxicant. It is thought that the taste of the "mixture" will be so incomparably filthy that no human being will be able to swallow it! But I believe this will be found to be an error; the palate will be educated to like the compound; and the man who gets drunk six times a day on methylated spirit will find the paraffin rather relishing than otherwise!

The new developer—rodinal—which is a strong solution of para-amidophenol with carbonate of potash, continues to grow in favor; and I know one very busy professional who has discarded all other developers in its favor. The "sweet simplicity" of a one-solution developer, together with the fact that rodinal answers equally well for plates and for bromide paper, are doubtless sufficient to account for the rapidity with which the new comer is making its way; but among those who still swear by "pyro" must be enumerated

TALBOT ARCHER.



BOSTON'S FOUR HUNDRED (after *Puck*).—"Penelope, my dear," said Mr. Funnie, "have you made up your list for the reception cards?"

"No, Shelly; I haven't had time. It won't be much trouble, though. I've written to Dr. Elliott and asked for the subscription list to the *BULLETIN*."

A FEW THOUGHTS ON THE NATURE AND USE OF CRITICISM.

BY REV. F. C. LAMBERT, M. A.

THOSE of us who are sufficiently enthusiastic in our photographic work to read our technical journals, can hardly fail to have been struck with the general unprofitableness of the majority of our exhibition notices and critiques. Only the wealthy and leisured few can manage a visit to more than one or two of the annual shows. Yet we "stay at homes" do feel some interest in what the "other fellows" are doing, and are, I trust, not too proud to learn a lesson from them; but how is that to be done? This question has been floating about in the mind of the writer for some time past, and has not yet met with an answer completely satisfactory. A few thoughts, however, have suggested themselves from time to time, and are now humbly offered for the consideration and emendation of those deeper in years and wider in experience.

1. QUALITY VS. QUANTITY.

The first thing to suggest itself is, that if the number of pictures noticed was reduced, more space and attention and consequently more instruction might be based upon the few that were noticed. Now, while it no doubt is gratifying to each exhibitor to see his pictures mentioned, yet a mere mention is but "small beer" to a soul thirsty of praise.

In those exhibitions where the work is grouped into classes, I venture to think that the general reader would greatly prefer and certainly profit more by having, say, the two (or at most three) best pictures fully described and "annotated," to having a list of names and titles with just one word or so about each. The latter plan gives little or no idea and less instruction to the absent reader (*i. e.*, absent in body but present in mind), while an honest and careful description of a picture would at least convey some ideas as to how the work had been attempted and carried out.

2. UNPREJUDICED DESCRIPTION.

It is only those who have seriously and honestly tried to describe any picture, who know how truly difficult it is to separate personal feeling from an unprejudiced, impartial description. It is not to be thought of for one moment, that any man who takes upon himself the work of criticism would permit any personal feeling against the worker to prejudice him. The prejudice now under consideration is that naturally arising from one's own personal love of certain kinds of work or methods of execution. For instance, some eminently skillful portraitists turn away with something akin to contempt from a simple landscape study. Some eminently successful workers with the hand camera and quick shutter have no admiration for architectural work. Again, those who find every virtue in rough paper or out-of-focus methods, see no virtue possible in a glossy surface or fine definition. Each and all of us naturally think our own chosen path and methods of work better than those of others.

Thus without knowing it we may easily give a very prejudiced description of work done by others who do not run in our groove or follow our methods.

To form anything like a just, fair and honest opinion, it is necessary to sink one's own identity for the moment, and see the work with eyes which en-

endeavor to look at all kinds exactly as they are, and not what we for the moment may think they ought to be. This of course purely for the sake of describing the work truthfully—i. e., without personal preference or prejudice.

3. FORMATION OF UNPREJUDICED OPINION.

It is at once clear that the business of the critic is to form some opinion, and then express it. What has just been said about giving a truthful and unprejudiced description, applies with equal force to the formation of an opinion likely to be of any value to others. If a man has no love for landscape work, it is clear that he will be but a poor judge of what is good or bad in that branch. Or, again, if he tend to confine his own work to one set of subjects or method of working, he will be a poor judge of the work of men on other branches or by other methods. Or, supposing his experience to extend to those branches under review, even then the personal feeling will have a good chance of creeping in unsuspected. What, then, should the critic attempt to do? I venture to think that he should compare the work before him (whatever be its subject or method) with other work of the same or similar kind. If the subject be one which is not well known to him by actual experience, then his standards of comparison must be the best work of the most generally acknowledged masters in that branch. Rubies are to be compared with rubies, and not with opals. Each has its beauty, though we may infinitely prefer the one or the other.

Furthermore, there seems to be no lack of confusion between subject and treatment. Before any opinion worth having can be formed, one must first discover, as far as may be, the aim or goal of the worker. This is a matter entirely apart and separate from the selection of subject. A man may be every bit as good a shot as we ourselves, although he prefers grouse, while we confine our attention to partridge. If the worker has set a certain object before him and attained it, then it is good work *of its kind*. Whether we deem it desirable quarry is quite another and much larger question.

The critic is quite within his province when he discusses the question of selection of subject; and when the subject does not lend itself readily to artistic treatment, or, for other reasons, is in his opinion a bad subject, yet he should be careful to keep apart in his mind the unworthiness of the subject and the worth of its treatment. It is obvious that a splendid subject may receive very faulty treatment. On the other hand, a skillful worker may at times "make a picture out of nothing," or by masterly treatment of the simplest subject produce a masterpiece. Simplicity of method is often a good test of a man's real knowledge and power.

4. CANDID EXPRESSION OF OPINION.

Having formed an opinion upon (a) the nature and capabilities of the subject, (b) upon the aim which the worker set before him, and (c) upon the degree of success in carrying out the proposed plan, the next step is to express that opinion with perfect candor.

Many critics, not only in the domain of fine art, but also in that of literature, seem to labor under an impression that they are sent into the world as *angels*, in the perfection of their knowledge, but as regards their end and purpose angels of *destruction* only. It will be disputed by few, if any, that criticism is desirable or not, according as it serves a useful purpose or the opposite.

Hence it may well be doubted if those critics who regard criticism and fault-finding as synonymous terms serve any useful purpose.

If the best works on view are selected, it may reasonably be supposed that they will have some merit, and hence any candid opinion must contain a fair and just statement of their good as well as their bad points. A wise gardener will thin out some fruit so that what remains may come to maturity; but a hurricane sweeps the tree so that nothing remains but bare branches. There are they who somewhat remind us of Congreve's lines :

" There are some critics so with spleen diseased,
They scarcely come inclining to be pleased,"

and some critics seem to breathe only on the hurricane or tornado principle. A carefully thought out and unprejudiced opinion will nearly always have both praise and blame to bestow, often in very various proportions. A candid, honest opinion will strive to set both in fair and just light, on the one side steering clear of the Scylla of fulsome flattery, and also on the other avoiding the Charybdis of ill natured blame or personality. At the same time the critic has a duty to perform, and where he is honestly convinced that certain work is calculated to produce baneful results of itself as well as degrading others into pernicious imitation, he should as unflinchingly express his opinion as a surgeon would remove a diseased part. In the laudable endeavor of the many to find for themselves new fields, some few have so far left behind good taste and the fitness of things as to have gone to the extent of endeavoring to portray with the camera such scenes as death-beds, dissecting tables, etc. These must be, on the one hand, either nauseous, mock sentiment, or, on the other, gross outrages of public feeling.

5. TWOFOLD NATURE OF CRITICISM.

The impression gathered from any work of art is of a composite nature, although its components are seldom apparent except upon analytical examination, and even then they sometimes defy isolation. The ultimate elements may roughly be grouped into Bad, Good and Indifferent. As regards the third, much will depend upon personal inclination and taste. Nothing of any use can herein be said. There remains then to consider the Bad and Good points. Let us first get rid of the former group.

A.—BAD POINTS, FAULTS, ERRORS OF OMISSION AND COMMISSION.

Under this heading we may keep up a separation between faults, etc., of subject, and those of treatment, workmanship.

Under the first subdivision would come such questions as affect public feeling, morality, decency. Again, errors of subject may tend to the inconsistent, *e. g.*, angels, ghosts, and also historic characters of remote ages. Again, inconsistencies of the various parts of elements, when taken together; figures and their appropriate surroundings; dress; accessories.

The second subdivision will include the arrangement (composition, etc.) of the relative parts; questions of lighting, definition, exposure, printing methods, mounts, frames. These may each and all show neglect, ignorance, offense against good taste, etc., and if passed over in silence might be taken as permissible or even desirable methods of work for the study (and possible imitation) of others.

Whenever a critic can give a good, *i. e.*, logical reason, or quote an admitted authority, so much the better. At the same time it is not to be urged that the *absence* of any reason implies the *non-existence* of reason.

A critic may bear in mind that it is in part his duty to guide, lead, and often instruct others; remembering also that the best help and instruction is often given by one who is able not only to point out a fault, but also to suggest a remedy, or at any rate a means whereby the fault may be avoided. All earnest workers will be glad to have their faults put before them in such a manner that they are enabled to know where and why they went wrong, and how repetition of error may be avoided in the future. "Faults recognized, are the stepping stones to success." Isaac Disraeli's words may be borne in mind: "Those who do not read criticism will rarely merit to be criticised." In other words, they will make little or no progress, being content to blunder along in their faults and ignorance. The reason that so many artists despise and ignore so much of what is offered as criticism, is because it is so often nothing more than a string of faults, real or imaginary, sadly too often set forth chiefly, if not solely, to show what a remarkably cute man the critic must have been to discover so many wonderful points, good and bad, of which the artist (poor soul!) was in complete ignorance. To return to our mutton. The critic, when finding fault, may remember that it is not a pleasant or profitable thing to have faults set forth unless a remedy is suggested.

B. GOOD POINTS—ORIGINALITY.

As the beam of justice has two arms, so the critic's function is equally to point to praise and blame. He who has not in view his own critical acumen, but, on the other hand, desires to speed the worthy, will ever be ready to deal out praise and give every encouragement to honest effort producing good work. Where honest, straightforward commendation cannot be given it is better to say nothing. Pope's line, "Praise undeserved is scandal in disguise," is only too true in this connection. Truly the earnest art critic has a noble work before him in giving every encouragement, help and guidance to those whose work shows signs of better things possible.

Now and again some one will make bold to follow the promptings of his own mind and show signs of strong individuality, originality, genius. Surely it is a noble work to foster the divine spark and fan it into flame by sympathetic and honestly deserved encouragement. Would that it were more often that we could say of our present day writers that

"The gen'rous critic fann'd the poet's (artist's) fire
And taught the world with reason to admire,"

—*Pope*.

Alas! how often does the green-eyed monster devour such new-born infants, or at best

"Damn with faint praise, assent with civil leer,
And, without sneering, teach the rest to sneer."

Possibly the reader may wonder that no notice has been taken of what is perhaps the silly-*ist* of all silly platitudes, *viz.*, "Critics are men who have failed." Macaulay, who can scarcely be classed among the men who have failed, says: "It may be laid down as an almost universal rule that good poets

are bad critics." And what applies to poets applies *mutatis mutandis* to painters. Disraeli also pointed out, "The talent of judging may exist separately from the power of execution." Would not the bricklayer or mason say with equal truth that the architect was a man who had failed?

THE APPLICATION OF ART TO PHOTOGRAPHY.

BY H. P. ROBINSON.

Is there anything new to be said on the subject of art as applied to photography? Perhaps not. We may be in the dreadful case of the novelists who, we are told by an eminent American writer, have used up all the plots, and there is nothing left to tell. But, on the other hand, other writers hold that everything happening in life is a story in itself and affords subject for much more to be said, but these latter wearisome realists prove their case by examples of such laborious detail and length that we decide we will not have any more new—of the kind—but would prefer to go back to good old tales in which a story is told, even if it is only the old, old one. Some of us in like manner have been carried away by the new art, the new painting, the new music, but it begins to pall; we get tired of being told an infinite deal of nothing, and sigh for the old familiar airs and the old sound art that we can understand and appreciate.

So the art that we have been told is dead, is still alive and welcomed by true artists, and there is still room to preach its doctrines. Indeed, looking at the quality of the photographs still turned out in their thousands, there are, apparently, vast numbers of photographers who have never heard of the connection of any art, new or old, with their processes. And if all has been said, there is still a necessity to obey the wise maxim of the teacher, "Reiterate, reiterate, reiterate!" I shall, therefore, continue to "sing the old songs," and give you a few chapters on art as it can be employed in photography to the greatest advantage—the art of order as opposed to the pseudo-art of chaos.

All art depends, more or less, on selection and arrangement, and it is unfortunate that the processes of photography confine us within rather narrow limits; but if we choose photography as our means of expression, it will be much better to cheerfully make the best of it, than bewail the fate that does not provide us with the advantages of the poet, the painter or the sculptor.

In the art of all ages something may be traced of an effort among the artists to work according to some principle, and to arrive at some law by which the production of works of art may be governed. These so-called laws have grown and broadened down the centuries until we have them as they now stand, and are known under the names of Composition and Chiaroscuro. These laws should rule all art and are found to be applicable to all art, but, paradoxical as it may appear, the better they are understood, the more they are used, the less will they be visible to the uninstructed eye. For it is one of the first principles that the art should hide the art.

Without going minutely through the rules which have been so often given, I will endeavor partly to generalize the subject, and also to show how a knowledge of the laws have governed the production of some of my own photographs, with illustrations. In using my own pictures for this purpose I do not do so.

for the sake of pushing them unduly before the reader. Indeed, as I shall explain further on, it is doing the pictures a mischief, rather than being of any advantage to their author, to analyze them and show how they were done; but I at least know what I intended in my own work better than I could search the mind of another. Turner said that Ruskin found more meaning and beauty in his pictures than he himself ever meant. I shall, at any rate, be saved this difficulty.

The first principle that must be observed, especially in a realistic art like our own, is that there must be no departure from the truth of nature. Painters may give us their ideas of things that have no existence; they may represent angels, either good or bad; "gorgons and hydras, and chimeras dire"; but if we are to be true to our art we must only fix on our plates what we find or place before the camera; selection and arrangement are all that are open to us—the nature of our own time. If we attempt to represent other times we are on the horns of a dilemma. To represent historic scenes, if truth is to be observed, we must suppose that we lived and practiced photography in those times, which, as Euclid is so fond of saying, is absurd; or we must suppose that the events of those times descended to our own century, which is still more absurd. A portrait of King David playing on his harp is impossible, because we have not got the music-loving King to photograph, and no fanciful imitation of him will do. We know that a model dressed to imitate the dead is nothing but a sham. Every photographer knows that

"A model King
A dressed model is to him
And nothing more";

and the greatest genius can make it nothing else. It ought not to be necessary to say this, but a good deal of this kind of thing has been attempted in photography. We have got over the delusion in England; but there has been what appears to me to be an injudicious encouragement of the sham historical, the last few years in America. There are quite enough legitimate and splendid subjects in the life and scenery of our own day to occupy all the time of our photographers without calling on the past, and there is ample room and range enough for the photographer to show taste, feeling, and even imagination, without indulging in flights of impossible romantic fancy.

It may perhaps be worth while to give a few preliminary hints before we come to the question of selection and arrangement.

Always do all you know, but never let it appear that you have had to struggle. Never let your picture suggest that you were at the end of your resources. To seem to have a bit in hand looks better than bankruptcy in ideas or the means of expressing them.

Young beginners like one of two very opposite things to be known. Either that they took a vast deal of trouble about their picture, or, on the other hand, that they dashed it off without an effort. The latter says in effect: "There you are, you see; behold a heaven-born genius and his happy emanations!" when, perhaps, his production was only a disguised imitation of another man's work. The other is, however, the greatest trouble. His picture is usually indifferent, and he will not leave you in peace to enjoy any good there may be in it, but worries you with an account of every little detail, from the burning of the midnight oil in studying the subject, through the humblest details of cos-

tume and scenery building down to trivialities of the process, the makers of the apparatus, and, by'r lady, the importers of the material. I am afraid I am treading on thin ice in saying this, but hope to be forgiven. I do not speak on this matter without experience, and as I would always rather hold myself up as an example of folly than anybody else, I will relate that experience. In the dim recesses of the long ago I produced a series of pictures which attracted unusual attention. They were all out-door scenes, with figures, with such titles as the following: "The Top of the Hill," "Nearing Home," "Brushing With Hasty Steps the Dews Away." Some were of figures by a mountain tarn. All the figures were placed on a bit of near foreground with a fine landscape behind them. The "press" was most complimentary, and praised the open air effect rapturously; quoted the "breath of incense breathing morn," were charmed with the skill displayed in getting such large pictures far away from the dark-room—it was in the slow wet plate days—and, in short, fooled me into being so proud of my work that I determined to write a paper, and show not only how artistically skillful, but also how mechanically clever I had been. Fatal ambition! Misplaced confidence! I wrote the paper. I described how the mountain tarn was but a little puddle dug up in a small back yard; the top of the mountain only the earth dug out of the hole, on which a choice collection of weeds had been carefully cultivated; and the rest combination printing. All this was described in the abominable pride of cleverness, and pride had its inevitable fall. The "press," after its enthusiastic praise, seemed to feel "sold," and denounced what it had before praised, and derided the ingenuity that had deceived.

All this, as I have said, was done in the pride of over-cleverness, and with an intention to astonish by ingenuity; but I have since disclosed some of my methods with a better motive, the real desire to teach, with a similar result. The critics, as usual, when they knew, prophesied. Here is a typical example. For years I produced landscapes with figures, that I am sure gave pleasure, and were praised for their naturalness. The only wonder was, where I could have found such obedient models, who seemed to be able to do everything but look stiff and awkward. Hoping to put others in the way of doing as I had done, I explained that to work with the ordinary stupid native was impossible, and that I had to use a substitute. The clothes of the figures were real enough, but the bodies inside them were those of young ladies who had been trained to do as the designer of the intended picture directed, and when called upon, to add a good deal of appropriate dramatic action and expression. Now, the imitation of a body that is known to be dead, like Queen Anne, is, as I have endeavored to show, in very questionable taste; but to substitute one live body for another is quite a different thing, and, I submit, comes within the scope of our art. But when they heard of it, round went the critics. On this hint they spake. That the figures were not genuine aborigines was never suspected before; and, indeed, the substitution was so well acted that the natives themselves did not suspect anything out of the way when they met one of my models. Yet I believe I shall never hear the last of the unnaturalness of "Mr. Robinson's aristocratic models."

It was a wise Judge who said, "Give your judgment, but not your reasons for it." In like manner, the photographer should astonish, surprise and delight—if he can—but he will only spoil the pleasure of these emotions by taking his

audience behind the scenes and showing the ropes and pulleys. It must be remembered that art is a delicate thing, and that it is only a step from the sublime to the ridiculous. When the ticking of the machinery is obtrusive the life goes out of the figure.

[From *Photographisches Wochenblatt*.]

RAPID HYDROQUINONE, PARA-AMIDOPHENOL AND RODINAL.

BY DR. A. MIETHE.

RAPIDITY is the watchword for all operations nowadays. The public is impatient if it has to wait only ten minutes in the gallery. The possibility of a quick development without injury to the negative was first established after we had learned to treat the alkali developers, particularly the hydroquinone, correctly. The older hydroquinone formulas, as, for instance, Balogny's and Battin's, did not develop essentially quicker than iron, and the advantage rested more in the convenience and cleanliness, also in the durability of the ready mixed developer. I believe Battin was the first who tried successfully the addition of caustic potassa to the hydroquinone developer, which later on was essentially improved by Lainer's classic researches. These rapid hydroquinone developers were, particularly for short exposures, the most complete in use. I have worked for more than two years with Battin's mixed and afterward with Lainer's rapid hydroquinone developer, adding a little dry pyrogallie acid, with the best success. For instantaneous views I applied exclusively rapid hydroquinone of the following composition :

SOLUTION I.

| | |
|---------------------------------|-----------|
| Sulphite of soda..... | 35 grams. |
| Yellow prussiate of potash..... | 30 " |
| Hydroquinone..... | 7 " |
| Water..... | 550 c.cm. |

SOLUTION II.

| | |
|---------------------|-----------|
| Caustic potash..... | 30 grams. |
| Water..... | 550 c.cm. |

For development I took three parts I and two to three parts II, according to exposure and desired density. In cases where particular strength was required I added about 0.1 gram dry pyrogallie acid to 50 c.c. developer.

But no matter how energetically this formula works, and how fine, handsome and clear negatives are obtained, it has also its defects. A slight fog is quite unavoidable if the extreme developing strength is applied. This may be of no great consequence as long as a good printing light is at our disposal during the summer months ; however, in winter even the slightest fog may prolong the printing time improperly. But sometimes, which is worse, the caustic potash acts extremely energetically upon the gelatine film ; the same swells very much, and on many plates there is a considerable tendency to peel off, and it becomes very injurious. Plates developed with hydroquinone take twice as long to dry as those developed with pyro-soda. The worst, finally, is the danger of yellow fog. If the plate, after being fully developed, looks thin and the development is continued for one to two minutes, to give it strength, a slight yellow fog,

sometimes appearing only on some parts, can be calculated upon with almost certainty. Nothing is known to prevent this.

I have tried replacing part of the caustic potash by carbonate of potassium, to obtain more clearness, less swelling and less yellow fog, without sacrificing rapidity and energy. I succeeded tolerably well with this attempt, and developed with good success with the following developer :

SOLUTION I.

| | |
|---------------------------------|-----------|
| Sulphite of soda..... | 35 grams. |
| Yellow prussiate of potash..... | 30 " |
| Hydroquinone..... | 10 " |
| Water..... | 550 c.c. |

(Therefore a little more hydroquinone.)

SOLUTION II.

| | |
|--------------------------|--------------|
| Caustic potash..... | 5 grams. |
| Carbonate of potash..... | 35-40 grams. |
| Water..... | 550 c.c. |

The plates so developed work just as quickly and give the same sensitometer number, but the high lights are unfortunately wanting, the two highest sensitometer numbers having no more difference in density, and this is the case with Lainer's formula. This defect might be more injurious to portrait pictures than to instantaneous views.

About a month and a half ago, I received from Dr. Th. Schuchardt and from Professor Dr. Witt samples of para-amidophenol, chemically pure, and made some tests with this preparation, based upon Professor Dr. Eder's formula (*Photo Correspondenz*, July, 1891). Eder gives the following prescriptions as being the best :

(1.) PARA-AMIDOPHENOL AND POTASH.

| | |
|-----------------------|------------|
| Para-amidophenol..... | 4 grams. |
| Potash..... | 40 " |
| Sulphite of soda..... | 120 " |
| Water..... | 1,000 c.c. |

(2.) PARA-AMIDOPHENOL AND SODA.

| | |
|-----------------------|------------|
| Para-amidophenol..... | 4 grams. |
| Soda (fused)..... | 40 " |
| Sulphite of soda..... | 120 " |
| Water..... | 1,000 c.c. |

I have tried only the first one and obtained results which are quite analogous to Eder's. The developing rapidity is between hydroquinone—potash and hydroquinone—caustic potash ; the sensitometer number obtained is exactly the same with all those developers, the gradation likewise. A tendency to yellow fog I could not discover; the plates were much clearer than with hydroquinone and the covering strength with purely gray color, according to the time of development a very suitable one. All these properties speak very much in favor of para-amidophenol, which led to the idea, to force the developing rapidity by caustic potash. Eder mentions this experiment, but says that this developer can show no advantages in comparison with rapid hydroquinone. In my hands this developer did not prove to be particularly good. I used the following mixture :

SOLUTION I.

| | |
|---------------------------------|------------|
| Sulphite of soda..... | 3.5 grams. |
| Yellow prussiate of potash..... | 3 " |
| Para-amidophenol..... | 0.4 gram. |
| Water..... | 60 c.c. |

SOLUTION II.

| | |
|-----------------------------|------------|
| Caustic potash..... | 0.5 gram. |
| Carbonate of potassium..... | 4-5 grams. |
| Water..... | 60 c.c. |

This developer worked with flash-like rapidity, but it was not possible to obtain a fully developed plate without some yellow fog. Otherwise the gradation was good and the developing strength even rather stronger than in the rapid hydroquinone developer.

All these developing prescriptions, according to my opinion, have now been surpassed by the new preparation rodinal, a developer produced from para-amidophenol by Dr. Andresen. Although I have not made many tests yet with this developer, I have no doubt that it is far ahead of all other developers.

I will now give a description of my tests with rodinal.

The rodinal is a clear liquid which does not make the fingers slippery and has a weak taste of sulphite of soda. According to the formula it has to be diluted with thirty times its volume of water.

To test the developing strength, two uniform sensitometers were made, while from the same sheet of tissue paper two identical sensitometer plates of twelve numbers were pasted upon two thin glass plates. Under these two sensitometers two plates were always simultaneously exposed at a distance of 300 cm. from a benzine light; both were then developed simultaneously, each time one in fresh rapid hydroquinone after Lainer and the other in rodinal.

First Experiment.—Normal exposure, two minutes thirty seconds. Rodinal 1 : 30, freshly mixed. Both plates appear simultaneously; developing time until the plate developed in rapid hydroquinone showed a light fog. On both plates No. 11 is readable after fixing. No. 1 with rodinal is a little denser; and it is remarkable that with this latter developer Numbers 7, 8, 9 and 10 are covered much stronger than with hydroquinone.

Second Experiment.—Under-exposure, one minute. Developer as before.

On both plates, which are developed until the formation of a dense fog on the hydroquinone plate, No. 7 now just appears; otherwise result as before.

Third Experiment.—Just as I, only rodinal 1 : 50 diluted. Result as under II, only softer, still very fine graduated scale of the rodinal.

Fourth Experiment.—Four plates, each one minute exposed, all in the same quantity (50 c.c.) rodinal 1 : 30, one after another developed. Developing time: one minute, one minute, seventy seconds, eighty seconds; completely uniform results of all four plates.

The following would therefore be proven by these experiments. The rodinal is, even if fifty times diluted, of equal value in developing strength to the rapid hydroquinone, but it differs from the same by a much more intense reduction at the places of short exposure. This difference is undoubtedly the reason that several authors have discovered a much greater developing strength in the rodinal in comparison with other developers. If no sensitometer is used, this impression is prevalent, as the following tests will show. Two plates each, were

exposed on a dark day with the instantaneous shutter, first with an opening of $f/8$, then with $f/16$, and the first two plates were then developed at the same time in hydroquinone and rodinal. They appeared with equal rapidity, and the development was continued until the plate had a pretty good fog in the hydroquinone. After fixing, it showed that the rodinal plate gave a printable negative; the hydroquinone plate, on the contrary, was very hard, had thin glassy shadows and a strong yellow fog. The other two still less exposed plates showed a still more remarkable difference. The yellow fog in the shadows of the hydroquinone plate was so dense that it acted darker than the half-tones, while the rodinal plate had hardly observable traces of a discoloration. The first experiment showed further, that in the rodinal several plates can be developed without essential difference in density and hardness.

Regarding the durability of the rodinal developer the following is to be remarked: According to the declarations of the aniline factory the time of durability is unlimited; in well corked bottles it will remain colorless for a long time. About the diluted developer I made personally the following tests:

If the concentrated developer is diluted with water containing air, a light yellow liquid is obtained, which can be kept in the graduate glass almost unchanged. Only after two days the color passes from a light orange to red-brown, while small crystals form precipitation of a yellow flaky deposit. The change transpires somewhat quicker in an open dish. The intense coloration, as assumed by rapid hydroquinone—or pyro-potash—developer, is not observed with rodinal. The developing strength decreases quickly in spite of this small discoloration; after two days, only a hard negative could be slowly obtained with the usual developer.

All plates developed with rodinal show an exceptionally great clearness and handsome color of the precipitate. The first might be a considerable advantage in all cases, where by addition of potassium bromide every desired degree of covering can be obtained.

Over exposure may be remedied by great dilution of the developer or by an addition of potassium bromide. Potassium bromide acts as a strong retarder, but gives easily hard pictures; it is therefore better to have a little old developer in store for such cases. If the desired covering cannot be obtained, it can be remedied by an addition of some concentrated hydroquinone solution. I applied to 100 c.c. developer, 5 c.c. of the following solution:

| | |
|-----------------------|-----------|
| Hydroquinone | 5 grams. |
| Water..... | 100 c.c. |
| Sulphite of soda..... | 10 grams. |

Glass clear; very strong negatives of a grayish black tone are obtained, even if considerably over-exposed.

By reason of these experiments I believe that I am justified in presuming that rodinal might be suitable as an excellent developer for instantaneous pictures as well as for portraits. In favor of the latter application particularly is the fine modulation of the negative, as can be observed in the sensitometer plates.

All communications for the columns of the BULLETIN should reach us on Monday preceding the day of issue, to insure their publication at that time.

(From Photography.)

COLLODION AS A SUBSTITUTE FOR ALBUMEN IN POSITIVE PRINTING.

BY WALTER E. WOODBURY.

PART I.

(Continued.)

I have referred to this process as a new one; this is, perhaps, wrong. I should explain that the process is a very old one, but only within the present year has it been brought to anything like a state of perfection. It will, however, be new to a great many professionals and amateurs.

We are aware that the ordinary method of positive printing is based upon the combination of a chloride with silver nitrate, forming a sensitive compound chloride of silver. With albumenized paper the albumen is charged with the salts, and the silver afterwards allowed to soak in by floating the paper in the silver bath. With collodio-chloride emulsion, however, the principle is somewhat different. The collodion is charged with the salts, and the silver afterwards added. This forms the sensitive chloride of silver, the particles being kept suspended by the collodion. The paper is then coated with the sensitive emulsion.

The following method of making the collodion is one that I have found most satisfactory. Besides this I will give two other formulas, Liesegang's and Hiederstadt's, which the student can try, if so disposed, or if the following does not answer his expectation.

We require first a plain collodion. This is best prepared by mixing equal parts of ether and alcohol, and adding 2 to 3 per cent. of English pyroxyline. Now, the thickness of this collodion is a very important matter. I would recommend a 2 per cent. in the summer and 3 per cent. in the winter. A thin collodion is always better to work with; it gives an even film, and if sufficient density is lacking it is a very simple matter to coat the paper a second time, or it can be allowed to remain longer on the paper before pouring off the superfluous quantity. If, however, a thick collodion is used, all manner of evils arise. The film is likely to be thicker in some parts than others, which would be at once seen in the toning, as the thinner parts would soon become acted upon by the gold bath, leaving the thicker portions quite red.

Collodion, like wine, improves by keeping. An old collodion that has been allowed to stand some time is always superior to one freshly made, for the reason that it is more perfectly combined, and all sediment and foreign matter having fallen to the bottom, it is much clearer and cleaner. Therefore it is advisable to make the collodion some time previous to use, and after carefully decanting it without disturbing the sediment at the bottom of the bottle, add about one-half per cent. of castor oil. The addition of this small quantity of castor oil makes a wonderful difference in the glaze of the finished picture, while materially assisting the toning.

The collodion being ready, we take a glass measure capable of holding about 100 cubic centimeters.* Into this place 13 grams of nitrate of silver and 15 c.c. of water. Thoroughly dissolve the silver, and add 50 c.c.† of alcohol, the addition to be made slowly. In another small measuring glass we dissolve 3 gr. of citric acid in 50 c.c. of alcohol, and in another 3 gr. of chloride of strontium are dissolved in 50 c.c. of alcohol. Instead of chloride of strontium, many other chlorine compounds have been recommended, and may be employed, all varying in their effects. The principal advantage gained by the use of chloride of strontium lies in the color of the print; when toned

* It will be noticed that the French metrical system of measurement is adopted. This system is far and away the best, and so superior to our own confusing method that I should like to see it universally adopted.

† For abbreviation, c.c. stands for cubic centimeters, and gr. for grams (not grains). Those not accustomed to the French metric system should read the amounts as parts, thus—13 parts of nitrate of silver and 15 parts of water.

with this emulsion it is possible to get those rich purplish-brown tints, so much admired.

We have now four vessels, containing respectively the collodion, the silver solution, the citric acid solution, and the strontium chloride solution. The next operation, when all the ingredients are thoroughly dissolved, is to add the citric acid solution to the strontium solution, and after stirring well together, place in another vessel containing 100 c.c. of the plain collodion.

All the operations already described can be performed in the strong daylight without any injury, but as we are now about to form the sensitive emulsion it will be necessary to remove our solutions, etc., to a room lighted only by a yellow light. Although a moderately non-actinic light is sufficient, it must be noted that the emulsion is more sensitive than sensitized albumen paper. Green cathedral glass will be found the best and most agreeable light to work by.

We have now the collodion containing the acid and the chloride, and the silver solution. We mix the two together by dropping the silver solution into the collodion, stirring rapidly the whole time. The dropping is better effected by placing the silver solution into an ordinary dropping bottle. Too much care cannot be observed in this portion of the process. It will be noticed that directly the drop of silver solution enters the collodion it takes a white milky appearance. This is due to the formation of chloride of silver and other compositions which remain suspended in the collodion. It being very necessary that the silver and chloride be well distributed and thoroughly combined, the gradual addition of the silver solution and continual and violent stirring during the process is absolutely essential. If this is not observed an unevenness in the prints will be the result.

It must be mentioned that after the addition of the alcohol to the silver solution it very often happens that a portion of the silver crystallizes. As soon as this is observed the vessel containing it must be placed in warm water until the crystals are re-dissolved, when it must be immediately mixed with the collodion after the manner already described.

We have now a sensitive collodion emulsion. It must be well shaken, and allowed to stand for two or three hours. It must now be filtered in an ordinary collodion filter, and is then ready for use—that is to say, for preparing or coating the paper.

Hiederstadt's formula* is as follows: 1.5 gr. of chloride of lithium, 1.5 gr. of nitric acid are dissolved by the application of heat in 50 c.c. of alcohol; this solution is added to 500 gr. of ordinary 4 per cent. collodion.

Fourteen gr. of acetate of silver are dissolved with the aid of heat in 6.7 gr. of distilled water, then added to 150 c.c. of diluted alcohol, which is heated to ebullition.

The argentiferous solution is poured gradually into the chloride solution, and afterwards from four to six grains of glycerine solution are added.

Dr. Liesegang prepares his collodion after the manner following :

In a glass measure dissolve 8 gr. of nitrate of silver in 6 c.c. of distilled water, heat being applied. Drop this solution in a bottle containing 135 c.c. of alcohol. In cool weather it is necessary to place the bottle in a vessel containing warm water. Add 2 gr. of soluble gun-cotton, and after a good shaking pour in 160 c.c. of ether. Further violent shaking will produce a grayish white collodion. In another glass dissolve 1 gr. of chloride of lithium in 35 c.c. of alcohol, together with 1 gram of tartaric acid. This solution is dropped into the argentiferous collodion, which must be kept continually moving. If preserved in a well-corked bottle this collodion will keep any length of time.

(To be continued.)

AN early Presidential boom oft becomes a boomerang.

METHODS FOR COLORED POSITIVES ON PAPER.

To the Editors of the BULLETIN :

In reading over a work written by A. Fisch, of Paris, I came across the following, which I translate for the benefit of your readers, and it may be that many would like to try the process. If so, their reports would be read with pleasure. This is one of the many "Colored Processes" of which the Ferro-Prussiate is perhaps the best known and most practiced.

"PROCESS WITH NITRATES OF URANIUM AND COPPER." By means of this process, which is as rapid as that of the salts of silver, prints of a brown tone are obtained very warm, very agreeable and of an artistic stamp.

The sensitizing bath is composed of—

A.

| | |
|--------------------------|--------------|
| Nitrate of uranium | 23 grams. |
| Distilled water..... | 80 cubic cm. |

B.

| | |
|------------------------|--------------|
| Nitrate of copper..... | 7 grams. |
| Distilled water..... | 80 cubic cm. |

Mix these two solutions in a tray and immerse in it the gelatine sized paper, for about two minutes; then dry it in the dark. The paper thus prepared will keep for a considerable length of time and it becomes also very leathery. The exposure to the sun requires not longer than ten minutes, a weak image showing in the printing frame. It is then developed by immersing in a solution of

| | |
|---------------------------------|---------------|
| Yellow prussiate of potash..... | 16 grams. |
| Distilled water..... | 700 cubic cm. |

The image will instantly appear with a rich red-brown tone, with metallic reflection and bronzed. When the immersion has been sufficient, the image will appear with a nearly equal intensity on both sides, because it is in the body of the paper. By this means very fine transparent pictures are easily obtained. As soon as the print reaches the desired tone, wash it in pure water until the whites have become clear and pure, and all soluble salts eliminated; then hang it up to dry. No other fixing will be necessary.

In place of the yellow prussiate bath, if one is used composed of 2 parts chloride of platinum to 100 parts water, the prints will be a beautiful black.

In the same book is given a "PROCESS WITH NITRATE OF SILVER AND URANIUM" which promises very fine results. Float a sheet of paper on a sensitizing bath composed of the following :

A.

| | |
|-------------------------|--------------|
| Nitrate of uranium..... | 60 grams. |
| Distilled water..... | 50 cubic cm. |

B.

| | |
|------------------------|--------------|
| Nitrate of silver..... | 8 grams. |
| Distilled water..... | 50 cubic cm. |

Mix the two solutions, float the paper for two or three minutes and hang it

up to dry in a darkroom. Expose it under the negative and immerse in a bath composed of

| | |
|-----------------------------|---------------|
| Proto-sulphate of iron..... | 16 grams. |
| Tartaric acid..... | 8 “ |
| Sulphuric acid..... | A few drops. |
| Distilled water..... | 200 cubic cm. |

The development is very rapid and the print is fixed by washing in pure or rain water. The sensitiveness of this paper is so great that in diffused light a print is visible and black in eighteen seconds, and in half an hour before a kerosene light of moderate size at 5 inches distant from the flame.

The process is very simple and the chemicals of the ordinary kind to be found in every well conducted darkroom, and if it should be of sufficient interest to your readers, I will give you further formulas from the same book for other processes equally simple and no doubt fully as desirable.

Yours truly,

ABE LIZZARD.

OBITUARY.

JAMES V. ESCOTT.

ON January 18th last, at Louisville, Ky., one of the oldest photographic merchants of America, James V. Escott, passed away at noon, a victim of the prevailing epidemic, la grippe, and at the ripe age of seventy-six. There are few men who have ministered to the needs of the photographer that were held in as high regard as Mr. Escott. In the city he had made his home he had the highest esteem of his fellow citizens. Among photographic merchants his name was well known for honorable and earnest business ability. We are indebted to the firm of J. V. Escott & Sons, of Louisville, of which Mr. J. V. Escott was the President and founder, for the following account of his life gleaned from Louisville papers :

“James V. Escott was born in Somersetshire, England, March 10, 1816, and was therefore seventy-six years of age. He was the son of a farmer. He acquired an excellent education, and in 1838 decided to come to the United States. He took passage in a sailing vessel bound for New Orleans. It took forty days to make the trip. Two years after Mr. Escott came to this country he arrived in Louisville. He first engaged in the boat supply business with the late Captain Z. M. Sherley, under the firm name of Sherley-Escott Company. The store was in the old Commercial Row on Water street, above Fifth, at that time one of the largest and finest blocks in the city. The boat store was one of the first established in Louisville, and during the many years of its existence did a large business. About 1850 the firm was dissolved, and Mr. Escott being a man of fine artistic tastes, formed a partnership with F. Hegan and engaged in the business which he so successfully prosecuted up to his death. His store was then on Main street. In 1863 Mr. Escott went into the art business alone. Later he took his sons into partnership, and the firm became J. V. Escott & Sons, being incorporated under that name in 1878. During the last twelve or fifteen years he had occupied the store at 521 Fourth street, but was driven out by the fire which destroyed the Kaufman, Straus & Co. building. The fire at the time did Escott & Sons serious damage. It was an illustration of the confidence reposed in Mr. Escott that the insurance companies settled with him at once

upon his own statement of the loss. After the fire the firm reopened on Market street. Although Mr. Escott had not been actively engaged in business for some years, he remained President of the corporation which he founded.

"In 1844 Mr. Escott was married, Miss Anne Haldeman becoming his wife. She was a sister of Mr. W. N. Haldeman. Their married life was a very happy one, but was terminated by Mrs. Escott's death eight years ago. There were eight children, all of whom are alive but one, Ellen Escott. Those living are: Henry V. Escott, Wilson H. Escott, Walter N. Escott, John B. Escott, James S. Escott, Mrs. Emily McDonald, of Grassmere, Fla., and Miss Annie Escott. A brother and sister, who live in England, also survive the dead.

"Mr. Escott was a genial, bright and intelligent gentleman, who commanded the love, respect and esteem of all who knew him. He was even tempered and considerate, and it can be said of him with entire truth that he never had an enemy. He was emphatically a good, just and generous man. He was an earnest, working, consistent Christian, and was an elder in the First Presbyterian church. His life was a bright example which bore fruit, and will be long remembered with benefit."

OUR ILLUSTRATION.

THE handsome frontispiece that illustrates this issue of the BULLETIN is interesting in more than one particular. In the first place, it is an uncommonly good example of life-like posing, exhibiting an appreciation of childish ways by the artist, and a keen eye to catch the telling action that gives the picture as well as the portrait. The second lesson to be learned from this illustration is the manner of obtaining the depth of detail in the shadows in the print; this is the result of using the Aristo paper, on which the picture is printed. And here we may remark that the negative must be developed for softness and not any great density to give the best results with this paper. But even older negatives, that were made to use with albumen paper, will give very much better results with the Aristo paper after the first details of manipulation have been overcome. Yet another lesson to be learned from the illustration is the fact that a positive photograph can be made as easily as with albumen paper and a surface is obtained that is waterproof. Spatter some ink on the picture and let it dry, then with a wet cloth wipe it off and note the effect. Also note the beauty of tone of the print.



PHOTOGRAPHY AND DISEASE.—The latest application of photography to medical science is to use it as a means of locating tumors on the brain. The theory is that spasms are caused by affections of the nervous centers, and that the disturbance of a center is invariably followed by identically similar contortions of the muscles. A tumor must, of necessity, press upon a nerve center, producing violent spasmodic attacks. While in this condition the patient is photographed, and the exact position of the tumor discovered. Experiments have been successfully made in San Francisco by an "eminent local surgeon." We must confess we do not follow the reasoning which attributes spasmodic attacks to tumors on the brain. Why not to a tumor on any other part of the body? There seems to be something wanting in the explanation of the theory.—*Science Siftings.*

ANTHONY'S Photographic Bulletin.

EDITED BY

Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by **ARTHUR H. ELLIOTT, Ph.D., F.O.S.,**
and a corps of practical assistants.

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E. & H. T. ANTHONY & CO., Publishers.

SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

THE regular monthly meeting of this society was held at their rooms, 113 West 38th street, on Tuesday evening, January 12th. *President* JAMES H. STEBBINS in the chair.

Mr. Alfred Stieglitz had been announced for a paper on "Toning Slides with Uranium Salts, and a Few Additional Remarks on the Color of Slides in General." Mr. Stieglitz was unable to be present, but sent his paper, which was read by Mr. Murray. The paper in full appeared in the last issue of the BULLETIN. The following note accompanied the paper.

Mr. Peebles Smith begs me to give you the following method of his.

A.

Potassium ferricyanide... 4 grains.
Acetic acid..... 3 drams.
Uranium nitrate..... 4 grains.
Water..... 4 ounces.

Mix in order given.

Increasing the amount of ferricyanide gives redder tones and stains the gelatine, but this stain disappears in bath B.

B.

Alum..... 1 1/4 ounces.
Hypo..... 8 "
Silver nitrate..... 20 grains.
Ammonium chloride 40 "
Gold chloride..... 15 "
Citric acid..... 5 "
Water..... 20 ounces.

Boil this and decant if it precipitates. Before using this solution permit it to stand for an hour.

After toning to the proper point in A, rinse and dip into B, rocking until the high lights are perfectly clear. In this method expose and develop as for an ordinary slide.

In case of over-development, if the plate be left in B long enough, the density will be reduced. The plates thus treated resist the action of nitric acid, and the tone cannot be removed by continued washing.

Personally, I have not been able to give this method a trial.

Mr. Beach exhibited a stereoscopic camera and reported on the Bausch & Lomb contest.

Mr. Burton presented a report on the society's exhibit at the American Institute Fair. The expenses were \$193, this being defrayed by the sale of catalogues and by subscriptions.

Mr. Beach presented a long report on behalf of the joint exhibition committee of 1891, showing a large deficit. After considerable discussion, the report was laid on the table.

A committee to renew the lease of the present quarters having been appointed, the meeting adjourned.

BROOKLYN Y. M. C. A. CAMERA SECTION.

THE annual meeting of the "Central Camera Section" of the Young Men's Christian Association of Brooklyn, was held in the studio on Monday evening, January 11, 1892. *President* WILLIAM H. LOWERY in the chair.

The usual business transactions being over with, the annual reports from Secretary and Treasurer were read, after which the officers for the ensuing year were elected as follows: President, William H. Lowery; Vice-President, F. F. Braillard, Jr.; Secretary, Bernard A. Burger; Treasurer, William D. Johnson.

The committees appointed were: Entertainment Committee: Bernard A. Burger, chairman; A. H. Longstreet, E. A. Crowell, F. F. Braillard, Jr., Gentry Waldo. Room Committee: Arthur H. Longstreet, chairman; E. A. Crowell, J. G. McTaggart, C.

Wight, F. F. Braillard, Jr., William D. Johnson, William Morgenthaler. Lantern Committee: F. F. Braillard, Jr., chairman; B. A. Burger, Wm. D. Johnson.

The past year has in every respect been a very prosperous one for the Camera Section. Not only have we increased in membership, but the active part taken, and the variety of work done by our members, is indeed very encouraging and gives great hopes for the future.

Our membership on January 1, 1891, numbered but twelve active members, of which but half took any real interest or part in the work of the section; now we have an active membership of twenty, every one of which can indeed be called active, as not a week passes but what nearly all have been found at work in our studio and darkroom, as many as ten working together in one evening, but the average being about six.

The work of the members has not been confined to simply what the word "photography" implies, to take a picture—this we already know how to do—but our work has extended into almost all the branches of the art. Flash lights, bromide enlarging, copying, lantern slides, window transparencies, etc.; have all been made by our members with the best results; further than this, we have not been contented with merely making these, but have gone into the chemistry of the science, trying the new developers, the new plates, the new papers, etc., experimenting for ourselves, and measuring the results; thus we have gained a knowledge of the various methods, by our own experience, which has taught us more than any or all the books on the subject could ever have given us.

Demonstrations have been given during the year by our members on the following subjects:

"The New Developer, Para-amidophenol," "The Kalotype Printing Process," "Orthochromatic Plates," "Acid Fixing Baths," "Excessive Exposure," "Under-exposure," "Intensification," "The Rodinal Developer," "Aristotype Paper," etc. Papers on carbon printing, toning of bromides, printing on salted paper, are in the course of preparation.

During the year our rooms have undergone a great change, many improvements having been made. In the darkroom a new red lantern, with electric light, has taken the place of the old leaky one. New shelves have been added, and in every possible way the room improved, so that we now have a darkroom second to none in the city, in

which six can develop with ease and comfort. The studio, too, has seen several changes. Ten new lockers have been added. The old curtain background has given way to a new reversible one, showing one side drab and the other white. A fine portrait camera and stand have been added. A new burnisher and reducing camera for lantern slides are also found amongst our property. An enlarging lantern for bromides is being made.

Not alone to indoor work and to our rooms has the work of the section been confined. Our summer outings have been one of our main features. Not a holiday passed but what the section was out in a body photographing the beauties of nature and enjoying the sociability which always exists on these trips.

The outings made were: Washington's Birthday, February 22d, to Eatontown and Shrewsbury, N. J.; Decoration Day, May 30th, Mountain View and Little Falls, N. J., and, this section of the country offering such beautiful scenery, the next outing, July 4th, was made to the same place, going over a little different route; Labor Day, September 7th, to Nyack, Rockland Lake and Haverstraw, New York; election day to East Ches-ter, N. Y.

Besides these, impromptu trips were made Saturdays to Greenwood Lake, Pompton, Roton Point, Red Bank, etc.

Our stereopticon has been in great demand this season. We have given several exhibitions of our own work at different places and have operated the lantern at all the association lectures. At our meetings, held twice a month, many interesting slides have been shown and several new series are being prepared for the future.

BERNARD A. BURGER, *Secretary.*

THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

THE new rooms of the society, on the second floor of the building No. 10 South Eighteenth street, were opened January 21st, in the presence of a large assemblage of invited guests. The apartments consist of a commodious meeting and exhibition room, admirably arranged and adapted for the purposes in view; a reading room and library, well supplied with comforts, and a stock of books and magazines pertaining to photography in English and other languages, and a fully equipped working department, including dark-rooms, etc.

Those present included: J. Somers Smith,

Jr., W. C. Stevenson, Jr., Dr. E. C. Hine, John Carbutt, Jr., Samuel M. Fox, Morris Earle, David Milne, Herbert A. North, William A. Cooper, Cyrus Chambers, Jr., Samuel Castner, Jr., Francis J. Fassitt, Frederic E. Ives, David Townsend, John C. Browne, Professor Edwin J. Houston, Joseph C. Roop, John McClintock, Winfield S. Clow, George B. Wood, Craig D. Ritchie, Charles Paxson, Edmund Stirling, C. W. Canfield, of New York; George E. Essig, H. H. Furness, Jr., George Vaux, Jr., Charles S. Bradford, Jr., of Westchester; Alexander Hemsley, Henry Troth, John F. Simons, W. D. H. Wilson, Dr. Ellerslie Wallace, Anthony W. Robinson, Dr. George I. McLeod, J. H. Kay, of Gottenburg, Sweden; Robert S. Redfield, W. H. Walmsley, John H. Bradway, William S. Vaux, Jr., John Carbutt, W. L. Lincoln Adams, J. M. Heintz, Louis Taws, A. J. Keppelman, John G. Bullock, J. L. Dillon, Henry T. Coates, Edward A. Casey, Edward Pennock, Charles R. Pancoast, W. S. Sword, Thomas L. Perot, Henry G. Bryant, Joseph M. Wilson, W. A. Cheyney, S. Hudson Chapman, Robert C. Clarkson, Henry Chapman, W. S. Harding, Samuel Sartain, James Wilson, John Sartain, Harry Chapman, Jr., W. N. Jennings, Dr. Paul J. Sartain, Charles F. Fellows, Alfred Mellor, Frank S. Lewis, Professor G. Howard Cliff, W. H. Jackson, of Denver, Col.; Mr. Inglis, of Chicago, and Joshua L. Bailly.

A stated meeting of the society was held Wednesday evening, January 13, 1892, Vice-President Joseph H. Burroughs in the chair.

The Board of Directors presented their monthly report, in which they announced the election of Horace Howard Furness, Jr., to active membership.

Progress was reported in the work on the improvements in the meeting and workrooms, and it will be completed in time for the opening reception on January 21st. Attention was called to the Honor Picture Competitive Exhibition, which would open on the evening of the reception, continuing until February 10th. On the evening of February 3d an illustrated lecture would be given by Dr. C. L. Mitchell on "Switzerland—the High Alps."

Mr. F. E. Ives exhibited one of his cameras for composite heliochromy. With a lantern objective having only one (large) aperture this camera produces three sharp images, exactly alike as to size and perspective and on one plane. Mr. Ives stated that such a camera would prove to be a practical necessity for composite heliochromy, and he regarded it as an optical triumph.

The subject announced for discussion, viz.: "The Permanency of the Undeveloped Image on Dry Plates—What Conditions Influence It?" was next taken up.

Mr. Pancoast stated that some time ago he purchased three dozen plates of a well known make. He used one dozen with excellent results at the time of purchase; the rest he laid aside, and did not use them until May, 1891, when he exposed four and found them all right. On May 16th he exposed six more on landscapes and interiors, giving rather full exposures. These were kept in the holders until August 12th, then transferred to a box containing old-style separators, and put away in a dry place, standing on edge. A week ago Mr. Pancoast commenced development. On placing a fully exposed landscape in pyro and potash developer no trace of image appeared. A second plate treated to a dilute alkali bath previous to the pyro, then subjected to a prolonged and forced development, produced no better result. A third plate, landscape, hydroquinone developer, still no result. A fourth plate was next tried in a mixed eikonogen and hydroquinone developer, and, strange to say, a very fair negative was the result. He then tried some of the unexposed plates on neighboring houses, producing good negatives. A plate of another man, purchased in 1889 and packed with the others, subject to the same conditions, on development with hydroquinone resulted in a good negative.

In reply to questions, Mr. Pancoast said the temperature for all was the same—about 60 degrees. He still had one plate as yet undeveloped. They were glass plates.

Dr. Mitchell said it was generally recognized that eikonogen would bring out details that pyro would not. He had several times used pyro on much under-exposed plates, and notwithstanding the use of a large quantity of alkali he got hardly any image. He remembered one or two cases where, noticing fog on the edges of the plate, he had poured the developer off, washed the plate and put it in eikonogen developer, the result being an almost instantaneous flashing up of the image, so quickly, in fact, as to give one the impression of an over-exposed plate. While he could not explain or give any good reason why Mr. Pancoast's plates did not come up properly, he thought there was no question that eikonogen would often bring out an image that pyro would utterly fail to produce at all.

Mr. Earle stated that he had tried similar experiments in this direction. He had pur-

posely carried exposed plates in the holders for six months and more, and on development with the eikonogen had obtained as good negatives as he ever did. The developer was eikonogen—not hydroquinone and eikonogen—from which he judged that in the mixed developer it was the eikonogen that was the more active agent.

Mr. Carbutt said that his experience had been quite contrary to Mr. Pancoast's. He had made several hundred exposures in Europe in 1890, and they were not yet all developed. He had developed from time to time, and had found no decrease in the image—if anything, rather an increase. Last week he developed two packages that had been exposed in 1890, and they had attained such an extreme rapidity that it took a very acid ferrous oxalate to get any decent image at all. With the ordinary eikonogen and hydroquinone developer they were entirely beyond control.

Mr. Pancoast thought the trouble lay in the material of which the plates were composed. In plates of some makes the emulsion was not permanent.

Mr. Bell added his testimony in regard to the pyro and a mixed eikonogen and hydroquinone developer. Several times, in using pyro, he had failed to get any good results, but in changing immediately to the mixed developer he had obtained a beautiful image.

Dr. Mitchell said that eikonogen, under certain aspects, was next to the new paramidophenol, a very energetic developer. It seemed to go to a certain point, however, and then stop, so that while one got a great deal of detail in the image, the required density would have to be obtained from hydroquinone. A combination of eikonogen and hydroquinone was very like a partnership between two good fellows. There was one fault which he believed existed in all gelatine dry plates, and which increased with the rapidity of the emulsion, and that lay in the boiling of the emulsion. In this boiling the silver reaches a state of strain, so to speak. The particles of silver, being in a state of molecular separation, seem to be hanging at a point where there is a certain amount of tension. Now some unknown circumstance—it may be the character of the weather, the temperature, or the condition of moisture in the atmosphere at the time the emulsion is made—serves to start a disruption, gradually at first, but increasing, so that after a while the emulsion becomes utterly insensitive. Then again it may be influenced by the action of the light in

making the exposure. The impression of the light on the sensitive surface may be just enough to start molecular disruption, which increases in a few weeks, utterly changing the character of the plate and preventing any image being brought out. Two or three summers ago, a former member of the society made an excursion to the Adirondacks, taking with him quite a large number of plates. They were a new lot, just from the factory, and he omitted to test them before he went away. However, he made a number of exposures, and when he came back started in to develop. He failed utterly in getting an image; the whole lot were bad.

Mr. Bell asked Mr. Carbutt if he knew whether manufacturers to-day used any tannin at all in making the emulsion.

Mr. Carbutt could only answer for himself. He did not use any.

Mr. Chapman had been troubled with the film negatives darkening from the edge inward when kept several months after exposure, the trouble increasing with the length of time they were kept until, in some cases, it covered the film entirely.

Mr. Wilson suggested soda in the packing or separating paper as the cause.

Mr. Carbutt recommended packing in waxed paper as a preventive of fogging from the edges.

Mr. Brown favored the old-time method of packing plates tightly together with a piece of orange post-office paper between each pair. Plates packed in that way, very tightly wrapped together, he had kept for four or five years, and they were as good at the end of that time as when he bought them. The present method of separating plates permits the circulation of air between them, carrying with it gases and impurities which would tend to injure the plates and bring about the blackened edges spoken of by Mr. Chapman, extending finally to the center of the plate. Some time ago he placed some plates that were working admirably into his plate-holders, where they remained over two months. When exposed and developed he found this blackening upon the edges. Curiosity prompted the trial of some of the plates he had kept in a tin box in the same paper packages in which they had been received. Result: no blackening. In the former case the plates in the holders were exposed to the air, whereas those in the paper box enclosed in a tin box were kept from contact with the air; none could get in. He would suggest that the makers pack their plates closely together, rather than separate

them, as was now done. In his experience those packed tightly did not rub or scratch.

Mr. Wilson mentioned a case where he had left a plate in the holder for awhile, and on development found the word "exposed" printed across the negative.

Dr. Mitchell suggested that, in making his exposure, he must have held the slide in the sun, and the painted letters, absorbing a certain portion of the light, made an impression on the plate when the slide was returned to the holder.

Mr. Stirling did not see how this could be, as the word "exposed" would be on the outside, unless the slide was put in the wrong way.

Mr. Wood referred to the plates mentioned by him at the last meeting, which had been three weeks in the hypo without changing. A friend of his had had the same experience, and had suggested that plates developed with eikonogen, above a certain temperature, so tanned the film, or did something to it, that it prevented its clearing at all.

Several lantern slides, made with the new para-amidophenol developer, were next exhibited by Dr. Mitchell, after which the meeting adjourned.

ROBERT S. REDFIELD,
Secretary.

AMERICAN INSTITUTE—PHOTOGRAPHIC SECTION.

THE section held its February meeting on Monday, the 2d. The Executive Committee reported that at the March meeting Prof. Elmendorf would give an illustrated lecture upon his recent "Journey from Holland to Nuremburg." The Annual Dinner Committee reported that Clark's, No. 22 W. 23d street, opposite Fifth Avenue Hotel, had been chosen as the place, and 7 o'clock P.M., Thursday, February 18th, as the time for the dinner.

After completion of routine business of the section, more than one hundred lantern slides were shown upon the screen. These slides had been selected by Mr. C. Van Brunt, Vice-President of the section, from many hundreds which had been kindly offered by members of the New York Society of Amateur Photographers. In selecting from so large a collection of good slides, Mr. Van Brunt had exercised his well known taste, both in variety and quality best adapted to the brilliant electric light used in the section's lantern.

Probably no single exhibition of a like number of equally good slides was ever before

given in New York. The work of Miss Catherine Weed Barnes, Miss Clarkson, F. C. Beach, A. L. Stimpson, Alfred Steiglitz, C. C. Roumage and F. Ruppert were worthy the attention of any critical audience—landscapes in which the delicate gradation of tone, the effect of light and shade in countless degrees of intensity, and the true rendering of distance, were remarkable; views of ocean, lake and river water in which the details of surface, glimmer of light and mirror-like reflections were wonderful; while many of the genre pictures gave ample proof of art in photography.

At the close of the exhibition several members spoke of the high grade of the work shown, and one gentleman present said the meeting might most appropriately be called an evening with art photography, and that it would be long remembered by those present. One member said he would like to have any artist inform him and the audience whether the pictures shown were not artistic, and if he did not so consider them, would he kindly explain *why*? To this request there was no response; probably the question was "too hard a one" for any artist to answer.

After commendation by the President and Secretary and a hearty vote of thanks to the makers of the slides, the section adjourned to the first Tuesday in March. F. G.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. Correspondents will please remember this. No attention will be paid to anonymous communications.

Q.—P. S. B. writes: I ordered a Ballard actinometer a few days since, and it arrived yesterday. It is in vain that I endeavor to understand the directions, or to appreciate the instant when the dark spot vanishes. At any time and in any light, if the instrument is held to the eye, the dark spot on the blue ground can be plainly seen. Under a skylight, to the best of my observation, the spot clouded itself (not vanished), and reappeared a few seconds afterward—in about twenty-two seconds. And again, under the same conditions, in about twenty-nine seconds. If you would be kind enough to give me full information you would greatly oblige.

A.—Probably the so-called “persistence of vision” has much to do with your difficulty, and we would suggest that you count your “actinometer seconds” up to the point where the spot clouds; also that care be taken when using the instrument not to press it too closely to the eye, as a strain upon the nerves or muscles surrounding the eyeball often seriously interferes with clearness of vision. After a little practice you will find that the times required for the clouding of the spot under the same conditions will agree closely.

Q.—O. C. C. writes: I am using both eikonogen and pyro developers, and would like to ask you a few questions: 1st. How much pyro and sal soda must I use to develop a $3\frac{3}{4} \times 4\frac{1}{4}$, 5×7 and $6\frac{1}{2} \times 8\frac{1}{2}$ plate respectively; also how much eikonogen for the same size plate? I get into trouble nearly every time I develop a plate, for the pictures come up with a shadowy look to them. I have examined my darkroom, plate-holder and camera, and think my fault lies in the developing. 2d. Does the developing of a negative differ in summer and winter?

A.—1st. Always use sufficient developer to cover your plate well. The exact amount will depend somewhat upon the kind of tray you have, but would say for $3\frac{3}{4} \times 4\frac{1}{4}$, 2 ounces; 5×7 , 3 ounces; $6\frac{1}{2} \times 8\frac{1}{2}$, 4 ounces; the quantity used being the same, no matter what kind of developer is used. 2d. In summer ice-water should be employed in making up the developers, and the temperature of the bath should be kept down as much as possible during use. Your trouble may be due to over-exposure—too strong a developer, or a ruby light in your darkroom whose rays are somewhat actinic. Send us one or two of your plates and we can advise you more fully.

Q.—C. C. O. writes: Can you send or refer me to a formula for toning bromides green?

A.—After finishing the bromide in the usual manner, treat it with a weak solution of aniline green, either in a developing tray, or if you are dextrous, with long rapid strokes of a brush, taking care to apply the color evenly, repeat this treatment until a sufficient depth of color is obtained. The aniline green may be dissolved in either water or alcohol, and the solution thickened if desired by the addition of gelatine.

Q.—W. I. T. writes: Do you know anything of a new process for copying tracings, plans, etc., etc., in colors? It is not a printing process.

A.—Perhaps the following is what you refer

to: Make a tracing of the drawing you wish to copy, on tracing paper, using hectograph inks. Transfer to a hectograph in the usual manner, and take off as many prints as you desire by rubbing down the paper upon its surface. If care is taken the process can be carried out without any injury to the original, but is only applicable to line work. The various colors desired in the finished copy must, of course, be applied in their proper places when making the tracing.

Q.—C. & P. write: We would be pleased if you would publish a good development formula for solar prints on plain crayon paper.

A.—A good way is as follows: Soak good photographic paper for an hour (keeping it immersed by means of a glass triangle) in a solution of

| | | |
|------------------------|---------------|---------|
| Whey..... | 25 | ounces. |
| Milk sugar..... | $\frac{1}{2}$ | “ |
| Bromide of potassium.. | 48 | grains. |
| Iodide of potassium.. | 180 | “ |

To obtain whey, heat milk to boiling, add a very few drops of acetic acid till it turns, then the white of an egg to clear, and filter through paper. The solution thus obtained is whey. Allow the paper to drain and dry. Sensitize when wanted on a thirty-five-grain solution of nitrate of silver, to which glacial acetic acid has been added in the proportion of one ounce of acid to fourteen ounces of the bath. Immerse in two waters successively and dry between folds of blotting paper. Perhaps the most constant developer is that of Crooke's, which is prepared by dissolving four and one-half ounces of gallic acid in twenty fluid ounces of warm alcohol. This solution must be filtered, and to it add seventy-two grains of glacial acetic acid. This forms a stock solution which will keep for an indefinite time. To develop take in the proportion of one-half dram of the gallic acid solution, to two ounces of water and seven minims of an eighty-six-grain solution of nitrate of silver. The prints must be submerged in this bath by means of the glass triangle until development is complete, which will probably be in the neighborhood of a half hour. Wash, fix in hypo, wash thoroughly and dry. Or an acid pyrogallol developer may be used containing 2 or 3 grains of pyro to the ounce of diluted acetic acid. It must smell strongly of acetic acid; and density is obtained after the details are out by flowing with more of the developer containing 3 or 4 drops to the ounce of a 30-grain solution of silver nitrate.

Views Caught with the Drop Shutter.

A FIRE broke out under NOTMAN'S Studio, 42d Street and Madison Avenue, this city, at about 1 o'clock on the morning of Sunday, January 17th, burning through the floor of their stock and dark rooms and part of their operating-room. Almost all of their stock was destroyed, together with a quantity of negatives and prints impossible to replace. The loss is estimated at \$1,200, fully covered by insurance.

WE note the removal of MR. GEORGE MURPHY, the well known dealer in photographic goods, from No. 2 Bond street to commodious quarters at No. 57 East 9th Street, at which location we cordially wish him every possible success.

WE had the pleasure of receiving a call from Mr. W. H. JACKSON, of Denver, Col., the other day. He has acquired the highest prominence in landscape photography, and never seems to tire of increasing the distance between himself and the nearest of his competitors.

ON January 19th last, the photograph studio of E. B. NOCK, of 148 Ontario street, Cleveland, O., was almost totally destroyed by fire, which broke out at two o'clock in the morning. The fire was said to have started from an explosion of chemicals stored in the studio. Mr. Nock's loss will probably not exceed \$1,200, and is fully covered by insur-

ance. We extend to him our heartfelt sympathy, and may he rise "phoenix-like" from the ashes.

THE promptness and efficiency of the Springfield, Mo., Fire Department saved Mr. WICKESER, the well known photographer, from serious loss on the 21st of last month. The building in which his studio is located was almost completely destroyed by fire owing to the freezing up of the adjacent fire-plugs and hydrants. His instruments and most of his stock were carefully removed by the firemen without breakage, and his loss will not exceed \$500. He intends starting again shortly in another locality, and has our best wishes for his success.

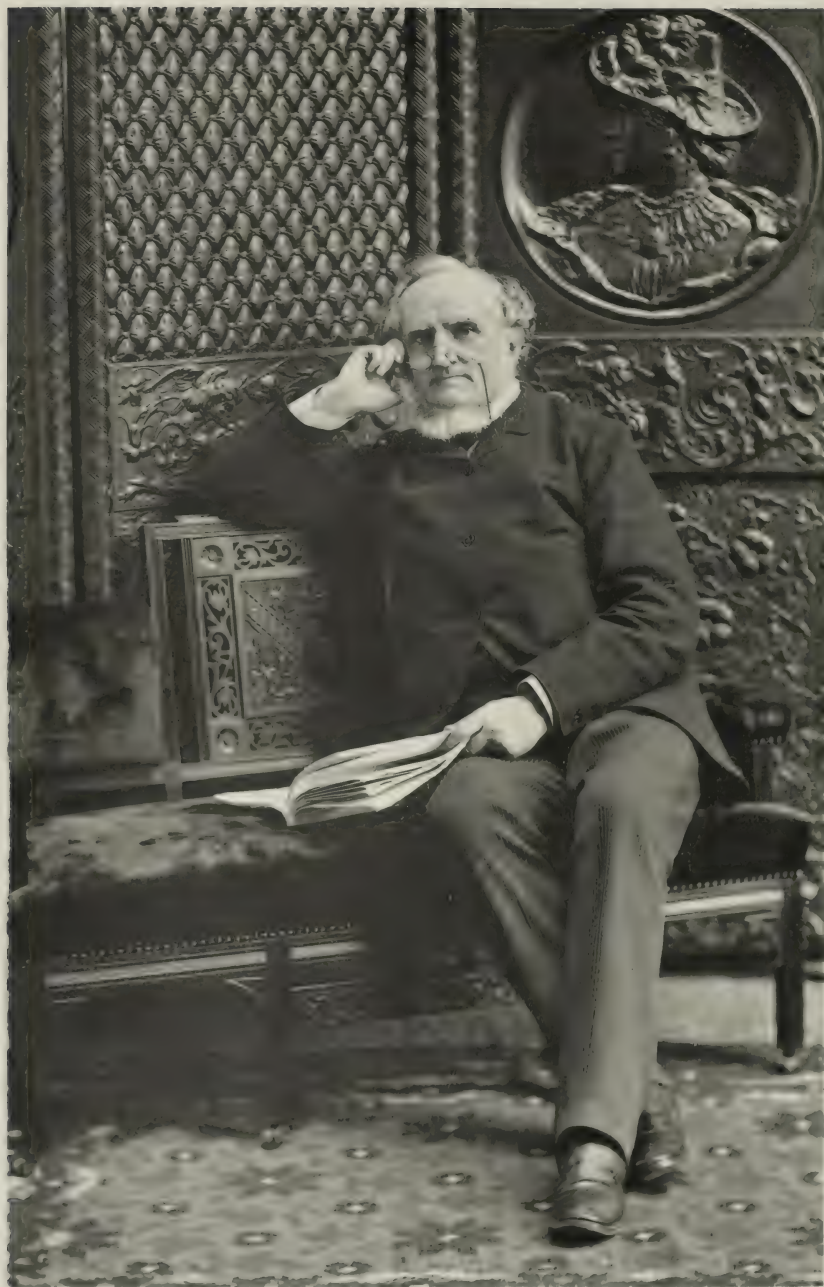
THE death of Mr. CHARLES H. SWIFT, of 2180 Washington Street, Boston, Mass., removes another one of the old-time landmarks from the ranks of veteran photographers. He was born at Andover, Mass., seventy-six years ago, and for thirty years practiced dentistry and photography in the suburbs of Boston. He retired from active business in 1882. On the morning of January 20th, he was found stretched upon the floor lifeless by the attendant who brought him his breakfast. A doctor was at once summoned, and stated that his death was due to heart disease.

ZIMMERMANN BROS., of St. Paul, the well known photographic merchants of the Northwest, send us a handsome calendar in silver and white, that adorns our sanctum. We tender our best thanks for the kind remembrance.

TABLE OF CONTENTS.

| | PAGE | | PAGE |
|--|------|---|------|
| A FEW THOUGHTS ON THE NATURE AND USE OF CRITICISM, <i>by Rev. F. C. Lambert, M. A.</i> | 74 | OBITUARY—JAMES V. ESCOTT..... | 88 |
| AMERICAN INSTITUTE—PHOTOGRAPHIC SECTION..... | 94 | OUR ILLUSTRATION..... | 89 |
| BROOKLYN Y. M. C. A. CAMERA SECTION..... | 90 | RAPID HYDROQUINONE, PARA-AMIDOPHENOL AND RODINAL, <i>by Dr. A. Miethe</i> | 81 |
| COLLODION AS A SUBSTITUTE FOR ALBUMEN IN POSITIVE PRINTING.—PART I (continued), <i>by Walter E. Woodbury</i> | 85 | SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK..... | 90 |
| EDITORIAL NOTES..... | 67 | THE ALKALIES USED IN DEVELOPMENT..... | 65 |
| ENGLISH NOTES, <i>by Talbot Archer</i> | 71 | THE APPLICATION OF ART TO PHOTOGRAPHY, <i>by H. P. Robinson</i> | 78 |
| LETTER FROM GERMANY, <i>by Dr. H. W. Vogel</i> | 69 | THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA..... | 91 |
| METHODS FOR COLORED POSITIVES ON PAPER, <i>by Abe Lizzard</i> | 87 | VIEWS CAUGHT WITH THE DROP SHUTTER..... | 96 |
| | | WHAT OUR FRIENDS WOULD LIKE TO KNOW..... | 94 |





BOSTON, MASS.

THE LATE WILLIAM NOTMAN.

ANTHONY'S

Photographic Bulletin.

EDITORS :

PROF. CHARLES F. CHANDLER, PH.D., LL.D.

PROF. ARTHUR H. ELLIOTT, PH.D., F.C.S.

VOL. XXIII.

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No. 4.

DALLMEYER'S NEW LENS.

In a preceding number of the BULLETIN we had occasion to make some few remarks upon a new telephotographic lens invented by Mr. Thos. R. Dallmeyer.

Lack of space forbade our entering upon the subject as fully as we wished, and we deem it of sufficient interest and importance to warrant a somewhat more elaborate discussion of the principles involved and the details of construction.

A lens, preferably of large aperture and short focus, forms the anterior element of the combination, while the posterior lens is a negative element, the focal length of which is some fractional portion of that of the anterior positive lens.

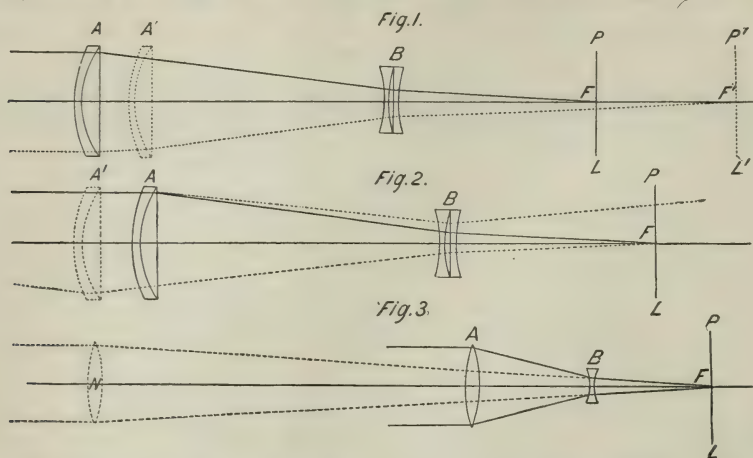
The larger the aperture of the anterior lens, the greater the rapidity of the combination, and its shortness of focus diminishes the absolute distance between the plane of its own focus for parallel rays and that of an object near at hand. The most important element in determining the size of the image produced by this lens is the relation between the focal lengths of the two elements. For a given extension of camera, the larger the focus of the anterior element is in proportion to that of the posterior, the greater will be the size of the enlarged primary image produced. In a construction of this kind the nodal point from which the focus is measured is purposely thrown into space in front of the lens itself, thus obtaining a larger direct image through the great length of focus without a long and bulky bellows or apparatus.

The cuts subjoined, which are reproduced from a former article in the BULLETIN, will serve more fully to illustrate our meaning and the construction of this lens.

The advantages resulting from a construction of this kind are enormous and the want of just such an instrument has been long felt.

Previous to this time there were but two methods in use for producing large images—either through the use of very long focus positive lenses, necessitating cameras of unwieldy dimensions; or by producing a primary image by means of one positive lens and the employment at the same time of a secondary one

placed behind the plane of the primary image; the enlargement thus produced depending upon the focal length of the secondary magnifier and its relative adjustment with regard to the primary image and the focusing screen.



- Fig. 1. The upper black ray meets the lens A parallel to the axis, and by a proper adjustment between A and B comes to focus at F upon the plate P L. If P L be removed further from the lens B to take the positions, P' L', the lens A will have to be moved slightly nearer to B and take the position A'. The lower dotted line represents a parallel ray falling upon A' which passes through the negative lens B and coming to focus upon the new position of the plate P' L'.
- Fig. 2. On the upper side of the axis a parallel ray to A finds its focus as in the dark line on the plate at F. If, however, some ray from a near object falls upon the lens A in the direction of the dotted line, after passing through the lens B is found divergent and no positive focus is obtainable. In the lower half of the figure, however, A is presumed to take a proper position A' when the ray from the near object passing through A' and also through the negative lens B finds its focus upon the plate in the fixed position chosen.
- Fig. 3. Represents a beam of rays passing through the two component elements A and B, coming to focus upon the plate P L. To estimate the rapidity, it is necessary to consider the full aperture placed at the principal focal plane passing through the nodal point at N. A is thus made to take up an imaginary position. The position of the nodal changes for different positions of the plate P L.

This latter method, involving as it does the loss of a large amount of light, is practically useless, except in the case of inanimate objects, owing to the great length of time necessary for a proper exposure.

At first sight it would appear as though in the new lens the law governing the sizes of primary inverted images produced by different lenses did not hold good. It is only necessary to remember, however, that in former constructions the length of focus was measured from some point between the places of the elements forming the combination, to the place of the primary inverted image produced, while in the lens under consideration the initial point of measurement is to be taken from a plane outside of and some distance in front of the planes of the anterior and posterior element.

Hence, with a given length of bellows it is possible with the new lens to obtain a focus any number of times the length of one obtained with an ordinary lens upon the same camera, and to have a resulting image correspondingly larger.

A reference to the two cuts on opposite page will, we are certain, emphasize and elucidate this statement more fully than is possible in any other way.

The question of rapidity is next to be considered, and in connection herewith it must again be remembered that the apparent focal length of the lens is far from the true one. For instance: suppose a screen be placed at a distance of 10 inches from an ordinary lens and a distant object focused. Suppose the

lens to have a focus for parallel rays of 12 inches. Now put the new lens in the place occupied by the old one, and focus the same object. It will be found that the image then produced is five times the size of the old one. Hence you are now employing what is practically a lens of 60 inches focus, and the rapidity will vary accordingly.

The application of this lens to astronomical photography is greatly simplified



FIG. 4.

View of a church about a half mile distant, taken with the new lens. Exact size of image on plate.

and the results obtained have been highly satisfactory. A negative of the moon has been taken with a camera extension of only 28 inches, which showed the various mountain ranges and topographical formation in detail.

By the employment of this new invention it will be possible for the amateur to take satisfactory pictures of yacht races without the risk of being run down by the competing vessels. Satisfactory negatives of distant mountain peaks and



FIG. 5.

The same object taken from the same point with an 8 x 10 R. R. (13 inches equivalent focus). Exact size of image on plate.

views become a possibility to the traveler and explorer ; in fact, a large extension to the already wide domain of possibilities from which to choose has now been placed at the disposal of the scientist, professional and amateur.

We await with great interest the results which this new and radical departure will produce, and we are confident that the impetus which photography will receive from its advent will be no slight one. Meanwhile we wish to aid and encourage a study and trial for science's sake of this new lens among our readers, feeling sure that the results obtained will be satisfactory and gratifying to the highest degree.

EDITORIAL NOTES.

At a recent meeting of the Holborn Camera Club a very interesting paper was read by Mr. Herbert Thompson on Kalotype No. 2, in which the speaker said that the paper strongly resembles platinotype in many ways, and should be printed until the detail in the high lights was faintly visible. The paper is very sensitive to light, and must be handled only in weak light. Development was recommended with—

| | |
|--------------------|-----------------|
| Rochelle salt..... | 1 ounce, |
| Borax..... | $\frac{3}{4}$ " |
| Water..... | 10 ounces, |

which should be mixed and used cold, allowing any sediment of undissolved salts to remain undisturbed at bottom. Twelve to 15 grains of a 20-grain solution of bichromate of potash should be first added to the developer. Less than the above quantity of borax produced a purple tone, and more resulted in a black tone with greater transparency in the shadows. Contrast and better control of the print were obtained with the bichromate, less than the normal quantity producing soft prints from hard negatives and more than normal bringing brilliant prints from thin flat negatives. Great care must be taken as to the quantity used, as the slightest amount in excess of the proper quantity will result in muddy, unsatisfactory prints. A bath of from twenty minutes to a half hour is advised, as less time than this is not sufficient to insure permanency. The fixing bath is composed of 4 drams of ammonia (880) to the quart of water, in which the prints should remain for ten minutes, and passed through a second bath of the same strength before washing, which latter should be in several changes of water. After thoroughly washing the prints should be placed on glass and blotted well to insure rapid drying.

THE Lowell (Mass.) Camera Club are organized under the following officers : President, Paul Butler ; First Vice-President, W. P. Atwood ; Second Vice-President, W. E. Badger ; Treasurer, A. S. Guild ; Secretary, G. A. Nelson. The Society of Amateur Photographers of Savannah, Ga., have also completed their organization with J. A. Bates, President ; Dr. S. A. White, Vice-President ; C. Easton Young, Secretary, and E. M. Hopkins, Treasurer. Also the Pittsfield Camera Club (Mass.), with the following organization : President, Rev. Dr. J. E. C. Sawyer ; Vice-President, A. N. French ; Secretary, Miss Ida M. Merrill, and Treasurer, Chas. A. Raymond.

A METHOD pursued by Commandant Legros, of France, to avoid much of the care and trouble incident to the use of aristotype paper in its ordinary treatment, is to develop a faintly printed picture on the paper with gallic acid. All the fine details are retained, the prints are permanent, and a considerable saving of time and annoyance result. Development is rapid and a reddish brown is the normal tone obtained. The formula recommended is a 3 per cent. saturated solution of gallic acid to which is added 20 c.c. of alcohol.

THE Washington (D. C.) Camera Club expect to have new and greatly improved quarters at an early date. At the annual election the following officers were chosen : W. St. George Elliott, M. D., re-elected President ; Robert

Rayburn, M. D., elected Vice-President ; W. B. Waite, Secretary, and Miss Frances B. Johnstone, Corresponding Secretary.

THE *Photographic News* of Japan contains (and by the way it is the only portion of the journal that we can understand) an excellent print of the devastation wrought by a recent earthquake in that country. The print is a reproduction from a photographic negative, evidently made from a gelatine plate, and compares very favorably with our own best examples of heliotype or autographic work.

THE Newark Camera Club are full of enthusiasm and prosperity ; their work so far this winter has been varied and constant, and they have still six more lectures and slide entertainments announced to supplement the seven that have already taken place.

WE note the appearance of Vol. 1, No. 1, of the *Photographic Review of Reviews*, published in Birmingham, England. The journal is $7\frac{1}{2} \times 10\frac{1}{2}$ inches in size, is illustrated with half tone relief plates, printed in a very artistic manner on nice paper, and, as its name implies, is a summary of current news photographic. It is well gotten up and ably edited. We bid it welcome.

THE twenty-fifth complimentary exhibition of lantern slides given by the New Orleans Camera Club on the 29th ult. was a very pronounced success in every way, many of the slides shown being of unusual merit. The exhibition was in charge of Messrs. T. W. Castleman, C. J. Fulda, J. P. Freret, J. A. Streck and F. M. Haskell, of the club.

WE are in receipt from C. F. Martin & Co. of Stevens Point, Wis., of two prints of water lilies, which, to judge from the pictures, must abound in unusual size and number in that locality. The prints are as good as the lilies are beautiful.

At the annual meeting of the Hartford Camera Club the following officers were unanimously elected: President, Dr. G. L. Parmelee; Secretary, R. A. Wadsworth; Corresponding Secretary, Charles R. Nason; Treasurer, Fred D. Berry.

A NOVELTY has just been patented for the use of smokers by which a slip of apparently pure white paper is placed in a glass tube that forms a portion of a cigar holder, and after a few puffs of smoke have been drawn through it, a fully developed photographic print is revealed. These invisible photographs are being prepared in New York in great quantities, to supply the demand that is sure to arise for them.

AN improvement in lantern work is said to have been lately perfected in London by which the slides are passed from a box attached to the lantern through the same and after exposure directly into another box by the simple pressure of an electric button.

ATTENTION of the BULLETIN's readers is called to an advertisement in another column for several back numbers of the journal. It is hoped that some of its old friends may be able to supply the missing links to complete the broken set.

WE are glad to welcome to the field of photographic literature the *Canadian Photographic Journal*, which makes its first appearance this month. The interests of professional and amateur are to be studied in its work, and if its efforts are commensurate with its aims as set forth in its introductory it will prove a valuable addition to the list. It will be issued monthly, and will be illustrated by representative Canadian photographers. Success to it! The publishers are Messrs. G. Gilson and H. C. Tugwell, of Toronto.

WE are reminded of the two extremes meeting, as we take up next Vol. I., No. 1, of *The Pacific Coast Photographer*, which is another new comer for photographic favor, edited by Mr. Morgan Backus, of San Francisco. Its aims, too, are high, and will doubtless be attained to as great a degree as can be expected of anything journalistic. A silver print will embellish each number, and its issue will be monthly.

W. S. STOUGH, of Springfield, Ohio, sends us a very artistic view of river scenery, made by himself on Mad River, near that city. The work is charming.

ANOTHER print, received from J. N. Bradford, of the Ohio State University, made by Mr. W. C. Harris, a student of the university, and titled "Just from School," is a particularly happy bit of posing and harmony: two small black children with the conventional white teeth and broad grins having been pictured in attitudes that are full of life and childish enjoyment, a slate and box under the arm of one furnishing the text for the title. We would extend our thanks for both.

WE would express our thanks for invitations received to attend the recent exhibition of slides by the St. Louis Camera Club and also that of the Stevens Photographic Society, and regret that distance and other engagements rendered our attendance impossible.

THE Lynn Camera Club has lately added to the resources of its rooms a billiard and pool table, which has caused more or less discussion as to its advisability. Especially in view of the fact that the club has a number of ladies amongst its members, it is believed to be a good move, tending to extend sociability and to provide an opportunity for recreation while waiting for the "fixing out," etc. The club would like to hear from other clubs as to what means of amusement, if any, are provided for their members.

THE Department of Photography of the Brooklyn Institute listened to an interesting demonstration of the practical working of Aristo paper at a recent meeting, on which occasion the entire manipulation was gone through with by Mr. F. J. Harrison. The new rooms of the institute are amply provided with everything needful for the comfort and convenience of the members and are much enjoyed.

By the retirement of Mr. Glaisher from the office of President of the Photographic Society of Great Britain, the society loses the active aid of one of its most zealous workers, whose official connection with the society has been marked by its long duration and efficiency. Mr. Glaisher takes with him the thanks of all interested in the society for his services.

THE annual dinner of the Photographic Section of the American Institute was held at Clark's, on Twenty-third street, New York, on February 18, and was a decided improvement over anything hitherto attempted. Many interesting addresses were made, and a report will appear in our next issue.

WE are in receipt from J. A. French of Keene, N. H., of a series of views and cloud effects of much interest. One in particular of an alder lined river, winding through intervale land, is very pleasing.

WE had the pleasure of spending an evening recently with Dr. H. G. Piffard, comparing microscopic lenses and making photo-micrographs. We were surprised and delighted at the many simplified methods, and hope he will give a demonstration before one of our societies.

OUR LETTER FROM FRANCE.

By LÉON VIDAL, *Editor Le Moniteur de la Photographie.*

The Photography of the Spectrum by the Lippmann Process.—The Present State of the Problem of the Direct Reproduction of Colors.—The Success of the Sunday Lectures at the National Conservatory of Arts and Trades.—A Résumé of those which have already been given.—Progress in Aristotypic Paper Printing.—Phototypo-engraving as applied to Book Illustrations.—A New Model of a Camera beautifully adapted for Instantaneous Exposures.—The Self-flattened Films of the firm of Planchon & Co.—The Pélégot Medal.—The Bookseller's Circle Paris Exhibition.—The Paris International Exhibition.

Messrs. Augustus and Louis Lumière, whose scientific and experimental attainments are well known, have just successfully repeated Mons. Lippmann's experiments of the reproduction of the colors of the spectrum.

The specimen shown us by the Messrs. Lumière is truly remarkable, and when carefully throwing light upon it from above, the colors become truly brilliant—in fact, their brilliancy is incomparable.

The success of these gentlemen is complete; they work with gelatino-bromide plates of their own manufacture. So great is the translucency of the emulsion film that it is almost invisible. This is just what Mons. Lippmann wished for, as one of the essential conditions to the success of his method.

If one admits that really the effect obtained is due to the phenomenon of interference, the result of such theory is that the intervention of white light must be, and it really is, an obstacle to the success of the experiment. This is easily conceived, as it is not possible to have the sensitized plate acted upon except by pure color rays, not having the slightest trace of white light. The moment this appears everything is immediately upset.

It is not possible to have any interference network in a film darkened by white rays throughout its whole thickness.

One may infer from the preceding remark that Lippmann's discovery can be reduced to a simple experiment without there being any room for ever expecting anything else from it.

The reproductions one would wish to obtain with colors cannot be accomplished but with light reflected from those views or objects that are to be reproduced. Under such conditions it is impossible to avoid white light ; consequently it becomes apparent that all researches in this direction will lead to nothing.

Here is where the thorn is, about which nobody thought when this discovery was first given to the public ; but the objection is a serious one, and of such a nature as to thoroughly dissipate all hopes previously conceived about the possible application of this method to direct reproduction of the colors.

This is not saying, however, that no ulterior application of this method may be possible, for surely obtaining iridescent effects, which are truly marvelous, and which industrial art may some day find a way of profiting by, as, for instance, in the manufacture of brilliant jewelry, by finding out how to place several small spectra at a certain angle, the reflections from which, full of richness in color, should produce novel effects, differing from anything ever yet seen in this line.

The lectures on technical and theoretical photography, organized at the National Conservatory of Arts and Trades, are going on with remarkable success. The audience invariably invades the large amphitheatre long before the appointed hour.

So far, among the notabilities called upon to take the floor, we have had such well known names as those of Janssen, Lippmann, Cornu, Laussedat. We will now listen to such as H. Becquerel, Wallon, Ct. Fribourg, etc.

The interest brought about by these lectures shows perfectly well that photography is to the public's taste, even in its transcendental applications to astronomy, physics and physiology. It is therefore to be hoped that in view of such proofs as to the utility of this art-science, the Government will make an effort, and will decide to create a regular and methodical Department of Photographic Instruction.

Messrs. Janssen and Cornu's lectures dealt on celestial photography.

Mr. Janssen confined his remarks to the labors on astronomical photography in its relation to the moon, to the planets and to the sun. He showed, by means of projections, the photographs of Saturn and Jupiter taken at the Paris Observatory by Messrs. Paul and Prosper Henri. So far, no work is to be compared to theirs in this line.

Mr. Cornu exhibited specially a celestial chart, and he showed some fine projections of stars and nebula, notably among the latter the nebula of Orion, by Mr. Common.

Albumenized paper seems destined to give way to the aristotypy, that is, to the gelatino-chloride and the collodio-chloride (celloidine) papers. We believe that those emulsions having collodion as a vehicle will, under equal conditions, yield much more lasting prints.

In France we have already several houses manufacturing this aristotype paper on a large scale.

Phototype engraving in half tones is beginning to extend itself to the current

publications ; but in this field we are yet far from obtaining such beautiful results as those which have been realized in the United States.

Commandant Fribourg, starting with one of the devices of the panoramic apparatus of Commandant Möessard, called the cylindrograph, has just had constructed a really ingenious hand camera which particularly enables one to operate with very great rapidity.

The objective is attached to a cone which terminates in a slit and moves around an axis located at the principal nodal point. Its focal length is only 6 centimeters.

Rolled film is necessarily the sensitized surface, as it has to be curved in the form of a circle with the point of rotation of the objective for its center.

It is therefore the objective itself that moves, and the slit allows the light to successively strike upon the sensitive surface as it moves around the film. The objective uses the largest opening, as there is no need for the use of a diaphragm, because all errors due to spherical aberration are self-corrected by the circumstance of a curved film.

A shutter becomes unnecessary, as the objective itself by its rotary movement does the shutting, unshutting and reshutting of the light through the moving slit.

The moment the catch is released the objective starts, moving from right to left, carrying along with it a curtain slide (?), and the rapidity of exposure entirely depends upon the time it takes the objective to reach its stopping point more or less quickly. In few words, here is the ideal of an apparatus with a very short focus and very wide opening—focal length, 6 centimeters ; diameter of the lens, 25 millimeters. No instrument had before combined similar advantages of rapidity.

As yet the apparatus is not known to the public, and I send you this piece of news in advance for the benefit of your readers.

I have tested, with great success, the self-flattened films manufactured by Messrs. Planchon & Co. Thanks to the thin kit of steel that supports them, they behave as if they were plates, one of the happiest solutions found for making films to assume the permanent condition of tension. We therefore think that this method is bound to enjoy a very legitimate success.

In order to honor the first Péligot medal, which is to be granted every other year to some person having rendered remarkable services to photography, it has been ascribed to Mons. Janssen, who, by his deep learning and grand personality, has honored photography by granting her the right of citizenship in astronomical science—the science of sciences.

The Booksellers' Circle is encouraging, as far as it can, all progress relating to photographic applications to the book trade. It has just decided to organize an exhibition of the processes derived from photography : collography, photo-engraving in high and bas reliefs, monochromic and polychromic, and the same will take place at their own parlors in March next. This will be highly interesting, and we will make all salient results known.

A general International Photographic Exhibition is being organized to take place in Paris on the same date. This will be a purely private enterprise that will fill a want which has long been felt.

We do not care about exhibitions of such nature, as their object is nothing more nor less than a matter of personal interest, and we have doubts as to the

real success of this attempt. Some will evidently make use of this means of publicity offered them, but we do not think that the said exhibition, rather too much noised about, will ever contribute in the least toward any progress in photography.

PARIS, January, 1892.

ON PLATINUM TONING AS APPLIED TO GELATINO-CHLORIDE PRINTING-OUT PAPER.

BY JAMES BROWN.*

[A communication to the Newcastle-on-Tyne and Northern Counties Photographic Association.]

FASHION, which regulates the cut of our garments, has, as might be expected, some considerable influence in matters photographic. During the past two years there has been a steady movement in the direction of warmth of tone. In the higher regions of photographic art there was a time when "Big and Black" held supreme sway, and anything approaching tones which most of us now admire was a thing held accursed. Now men's minds are everywhere asking, How shall we arrive at the warmest tones? and skillful concoctors of formulæ are holding high revel in their search for the mystic process which shall forthwith make all things sepia. The numerous methods of toning (or staining) bromide papers recently published, afford evidence of how strong is the revolt against blacks. We have, indeed, need to be careful lest, by overdoing it, we induce a revulsion of feeling. Above all, let us not outrage the eternal fitness of things by such proceedings as printing winter landscapes a bright red, and so forth.

Amongst all the methods of getting rich, warm tones, I know of none equal to that which it is my privilege to bring before you to-night—viz., the use of a gelatino-citro-chloride of silver paper and chloro-platinite of potassium as the toning agent, as by its means we can get tones of the most exceeding richness and warmth with ease and certainty.

After lying stagnant for many years, the gelatino-chloride process has at last become very popular. In its original form it was a collodio-chloride emulsion invented by Mr. G. Wharton Simpson in 1865. It never made much headway—why, it is difficult to say. To my mind a collodion image is in many points superior to a gelatine one. Amongst its principal exponents was a north-country photographer—Mr. George Bruce, of Duns. In 1882 Captain Abney proposed a gelatine emulsion, and his formula became the foundation on which every one has subsequently built, until the analogous collodion paper was almost forgotten. On the Continent, however, there has for the last year or so been in use a collodio-chloride paper, and recently a similar product, under the name of Celloidin paper, has been introduced into the London market. The late Herr Obernetter was first in the field, in 1885, with his now celebrated emulsion paper, followed by Liesegang, and after the lapse of five or six years we now have the choice of at least two brands "made in England."

My intention to-night is not to read a scientific paper, or to indulge in any theoretical or chemical speculations, but rather to go upon solid ground, over which I have myself trodden, steering clear of everything which has not been

* From author's corrected proofs for BULLETIN.

thoroughly substantiated in my own experience, and will treat (1) of printing, (2) of the toning bath, (3) of the process of toning, and (4) of finishing.

It may be mentioned here that my experience almost solely relates to Ober-netter paper, but I have handled nearly every brand in the market, and shall have something to say of each.

Printing is conducted in the ordinary way, any negative that is not either hopelessly thin or dense being suitable. Contrary to the text-books and advice so plenteously given, it is not necessary to over-print any more than on albumen paper—in fact, to do so is in most cases distinctly harmful.

After toning with platinum, no paper I have yet tried reduces to any great extent in a properly made fixing bath, and if we desire a matt surface, and so squeegee on ground glass, that operation considerably adds to the depth of the image; so, if we over-print, “leatheriness in the shadows” will result. It is necessary to remember, however, that the depth of printing must have some definite relation to the tone we desire to obtain. This will be discussed when we come to the toning stage.

The toning bath which I have found to be the best is a simple one :

| | |
|---------------------------------|------------|
| Potassium chloro-platinite..... | 1 grain. |
| Citric acid..... | 10 grains. |
| Distilled water..... | 4 ounces. |

A platinum bath will only work when acid, and the use of citric acid, instead of nitric, as usually recommended, is a great improvement, due to Professor Burton, who found that the latter acid has a staining influence upon gelatine.

Other baths have been recommended, which are not so good as the above, and possess the serious disadvantage that they will not keep, whereas this one will keep indefinitely provided the prints be properly washed before toning, so as not to contaminate the bath by silver salts. I have here a bottle containing a bath made up over two years ago, which has been in constant use ever since, strengthened when necessary by adding more platinum, which I keep in a dropping bottle mixed in the proportion of one part platinum to twenty parts water. When of proper strength the bath is of a dark straw color, and as the toning agent is used up, the solution becomes paler, so that by a little observation it is easily seen when the bath wants strengthening.

Coming to the actual manipulations, the first item is the preliminary washing, which must be thorough. The first wash must be rapidly performed, so as not to keep the prints soaked in the dissolved-out silver, else yellowing of the high lights will result. After four changes of water, it is necessary to dissolve out all the remaining free silver by a salt bath. After a minute or two in this, and another rinse in water, the prints are ready to tone. At this stage they are but little changed, and the process of toning, unless much prolonged, produces no effect that is visible to the eye. We only discover what tone we have got when the prints are in the hypo bath; but the action is so regular that success is certain. It is instructive, however, to see what color of image we are working upon by fixing a print without any toning, and I will presently show you a few examples. It will be found that the image suffers a very considerable reduction, and partakes of a yellowish red hue. By simply fixing without toning, warm red tones can be got if we print deep enough to compensate for the reduction that takes place, and there is no reason to suppose that such images should fade any more than does a bromide print. Indeed, the chances are in

favor of the former, as it has not been in contact with any salts of iron or acid clearing bath. I have spoken of the necessity of keeping up a definite relation between the depth of printing and the ultimate tone desired. Simply fixing a print much reduces its depth, but the more platinum we associate with the silver image the less does it reduce. This applies to all papers, but in a greater degree to the Ilford "printing-out paper." Toning then proceeds on certain definite lines, the stages being red, reddish brown, sepia, brown, dark brown and purplish brown. For the first stage, printing ought to be continued till the deepest shadows are slightly bronzed, and the toning will take, say, five minutes. With such an over-printed image, longer toning seems to intensify the print, and to block up the shadows. For any other tone than red, it is not advisable to print till the bronzing stage is reached, but to stop when the whites are slightly tinted, and toning will be accomplished in from five to fifteen minutes. The warmth of tone, which is the characteristic of this process, it is evident has for its foundation the yellowish red of the silver image, and, as we associate it with platinum in a greater or lesser degree, the tone varies from a warm red to the other shades I have named. There have been various attempts to completely substitute platinum for the less stable silver, but with no success. It was first supposed that the toning process was a depositing of metallic platinum upon the image; then it became the belief that a partial substitution took place; but Lyonel Clarke, in his book, assumes, with considerable show of reason, that an alloy of silver and the nobler metal takes place. Be that as it may, it is a process which, for certainty and beauty of results, merits every one giving it a fair trial.

After toning, the prints may be immersed in a weak solution of common soda, to neutralize any acidity present and stop toning, or may be placed direct in the fixing bath, made distinctly alkaline with ammonia, and not stronger than one part hypo to eight parts of water. For the sake of giving the prints a fair chance in the battle of life, it is advisable to have the hypo bath fresh, and to fix for not less than half an hour. After thoroughly washing in copious changes of water, the prints are given a five minutes' soaking in a bath of chrome alum of about twelve grains to the ounce. To avoid acidity, neutralize this with ammonia, and filter out the dense precipitate which is formed. This is of the greatest advantage, as it hardens the gelatine and renders it almost impervious to damp. So great is its hardening effect that a print so treated and dried cannot again be softened, and resists water almost boiling.

The next stage is the squeegeeing, which is best done upon finely ground glass. Bear in mind, however, that this must take place as soon as they are washed free from the chrome alum, as, if they are allowed to dry, they cannot be so treated. The adoption of the alum bath makes the sticking of prints to the glass almost an impossibility, and this is no small advantage. Much rubbish has been written about cleaning the glass plates previous to putting down the prints—by myself amongst the number. If really dirty, monkey soap will remove it all. Flowing hot water over the plate, and rubbing with the palm of the hand, will do the rest. It can then be placed under the tap and cold water run over it; then place the wet print in position, with blotting paper on the top, then a piece of waterproof sheeting, and squeegee vigorously. It is necessary to remember that any attempt to remove the prints before they are dry is to court failure. A matt surface may be got much more

easily by the use of finely ground pumice-stone powder, rubbing it on the dry print by hand. Mounting presents no difficulty if the prints be properly hardened in the alum bath.

It only now remains for me to briefly indicate some of the characteristics of the various brands of paper.

Obernetter's ordinary brand gives very fine results (his other makes I have not tried). Over-printing in the ordinary sense is not advisable, although there is a small amount of reduction. The paper is thinner than some others, and therefore must not be roughly handled.

Celerotype is a thick paper, and tones easily—printing normal.

Jacoby's requires deeper printing, and has a good range of tones, the warmer shades possessing a distinctive quality not seen in any other paper.

Luminotype, Talbot's "Beta" and Liesegang's aristotype behave well, and there is no great difference in result between any of them; but they have one defect in common, or, rather, the samples I have had through my hands possess that defect, viz., they are stained either pink or mauve.

Kuntzen's celloidin is a thoroughly good collodion paper, unfortunately also stained mauve, normal printing, and tones easily, yielding similar results to gelatine; but, on account of the hardness of a collodion image, it cannot be squeegeed.

Ilford "printing-out paper" possesses characteristics of its own. It does not require such deep printing as any of the others, and will not pass to the bronzing stage. Deep printing is indicated by blocking up of the shadows, but this point must not be reached unless short toning and reddish tones be desired. In my hands it has yielded a greater range of color than any other brand (from yellow to almost purple). For anything approaching full toning great care must be taken not to over-print.

COLLODION AS A SUBSTITUTE FOR ALBUMEN IN POSITIVE PRINTING.

BY WALTER E. WOODBURY.

PART I.

(Continued.)

WE have now our sensitive collodion emulsion standing ready for use, and the next operation is the coating the paper. We have, therefore, to first of all turn our attention to the kind of paper that we must use. It is a curious but lamentable fact that, notwithstanding the endeavors of many of our leading paper manufacturers in this country, they have been quite unable to produce a paper suitable for photographic purposes. Rives' and Saxe's paper are the only two that are of any use for this, as well as for a great many other purposes. It is very simple to get a paper with a fictitious glaze, produced by hot pressing and other modern appliances, but this will not remain after it has passed through all the various necessary fixing and washing operations.

But even with the two papers already mentioned, although they can be used satisfactorily, yet in order to prevent the collodion from sinking into the paper it is necessary to coat with arrowroot.

The paper most suitable for our purpose is that known abroad as baryta paper. It is used for collotype or lichtdruck prints, and photographers should have no difficulty in obtaining it from any collotype printing works. This paper is made by coating Rives' or Saxe's paper with a solution of baryta chalk and gelatine. It has a pink or

violet surface, which not only presents a very pleasing appearance to the finished print, but serves to hide any discoloration due to the deterioration of the collodion emulsion. There are four different qualities of this paper. The first is ordinary paper coated in the manner already mentioned; the second is a stiffer and stronger paper, resembling thin cardboard; the third is coated with a thick solution of insoluble gelatine, and stripped from glass, presenting a very high polish; the fourth is similar to the latter, excepting that the gelatine is soluble, and by the application of heat dissolving the gelatine, the collodion film leaves the paper and can be transferred to another support, after the manner of carbon printing.

For a preliminary trial procure some of the first-mentioned paper. For ordinary purposes it is not necessary to prepare the paper in any way; the keeping properties of the collodion emulsion are excellent, but if necessary to keep several months it should be floated, pink side downwards, on a bath made up as follows:

| | |
|------------------------|----------|
| Hydrochloric acid..... | 2 parts. |
| Citric acid..... | 2 “ |
| Tartaric acid..... | 2 “ |
| Water..... | 100 “ |

Allow it to remain on this solution about two minutes, remove, and hang up to dry.

There are several methods of coating the paper with the emulsion. For large quantities a suitable double frame should be constructed, in which the paper is held tight while the collodion is poured over it.

With the collodion emulsion the paper does not expand as it would do with any other preparation.

For our purpose, however, a piece of glass or wooden board of the same size as the paper is all that is necessary. A piece of wood with a knob in the center underneath is the most comfortable to work with. The paper should be pinned onto the wood or fastened onto the glass in such a manner that the right hand side and the bottom edges overlap about a quarter of an inch.

Hold the bottle containing the emulsion in the right hand and the board with the paper laid on it in the left hand. Carefully wipe round the neck and sides of the bottle and see that there are no air bubbles on the emulsion, then pour the collodion onto the right-hand upper edge of the paper. A little practice will soon enable you to judge the right quantity, but never be too sparing. With a gentle movement incline the board in such a manner that the emulsion flows well into the top left-hand corner, then down toward the bottom left-hand edge, and finally to the right-hand lower corner, where the superfluous collodion is allowed to run off. But have a care—not into the same bottle on any account if you are going to prepare another sheet, but into a separate wide-necked bottle. The bottle used to contain the emulsion for pouring onto the paper should not contain more than 6 or 8 ounces, and should never be filled up farther than a couple of inches below the neck. The best bottles for this purpose I have found to be those used for Hock and Moselle wines. They are usually of a non-actinic color, which is in itself an advantage. But the long gradual sloping neck prevents the formation of air-bubbles. These latter will be found the chief enemy of the collodion worker, but with care and attention they can easily be got rid of. They are usually formed by pouring the collodion onto the paper at too great a height, or by bringing the bottle to an upright position with a jerk. All these little details, trifling as they may seem, are of great importance when good results are desired. The collodion must never be allowed to flow twice over the same spot during the one coating, or an unpleasant ridge visible in the finished print will be the inevitable result.

Carefully wipe the neck of the bottle each time, to prevent little pieces of the dried collodion from spoiling the film.

For the production of high-class prints it will be advisable to coat the paper twice.

This is done when the first coating is thoroughly set. Turn the paper round the other way, so that the bottom and the top are reversed, and give another coating.

The superfluous collodion poured off into the wide-mouthed bottles is allowed to stand until the air-bubbles have entirely disappeared, when it can be used.

Owing to the speedy evaporation of the ether the collodion will soon become too thick. It should be thinned with a mixture of 1 part alcohol (.805) and 2 parts ether (.730). Well shake and allow to stand before using.

In pouring off the superfluous collodion from the paper gradually sway the board from right to left, in order to prevent the formation of ridges caused by the running of the collodion in one direction.

The collodion emulsion sets very rapidly, in warm weather about one minute, in winter three to four. When the superfluous collodion has run off, the paper is removed from the frame or support, and hung up to dry by means of American clips attached to a string.*

Right here we come to another very important consideration, which must on no account be overlooked. I allude to the temperature in which these various operations of coating and drying are to be carried on. Paper prepared in a moist room and dried slowly gives flat prints, while if dried at too high a temperature it will not tone at all.

The coating of the paper should be carried on in a cool, dry atmosphere, the room thoroughly well ventilated, as the fumes of ether and alcohol are exceedingly obnoxious and injurious to the health. Directly the paper is coated it should be taken and hung up in a room heated to about 60 degrees Fahr. After drying the edges are trimmed with a pair of shears and the paper laid down flat under a heavy weight. It should be well preserved from light and moisture. If rolled with film outwards, it can be kept in an air-tight tin case, and when required for use will fall into a flat position if unrolled.

I trust the reader will forgive me if I have been guilty of tautology or repetition in describing the necessary operations to be gone through in the preparation of aristotype or collodion emulsion paper. I have endeavored to make it as clear as possible, so that the most ignorant person will thoroughly understand it. I have also endeavored to impress upon the mind of the operator the fact that absolute attention to the minutest details is necessary to insure success. Having had occasion to prepare many thousand sheets I know the value of this, and as I am anxious to see this beautiful process more in use, I would not like the reader to try it, and, by omitting some trifling detail, get bad results and condemn the whole thing as useless, as a great many are apt to do.

We have now the finished paper, and in my next I shall describe the necessary operations to get the finished print.

The probabilities of its permanency will also be discussed. And later I intend showing how the collodion can be used for making transfer prints, transparencies, stereoscopic and lantern slides, and for reproducing negatives.

(To be continued.)

[From the Optical Magic Lantern Journal.]

THE OPTICS OF THE LANTERN.

BY J. TRAILL TAYLOR.

I SHALL assume the existence of the light, which, for the sake of simplicity, may be that emitted from incandescent lime. Now, as its rays radiate in every direction, the first consideration is the collecting as many of these as possible, and causing them to travel in just the direction we desire. If only a few of them, in other words, a

* I once used these American clips on wires running across the drying-room, and found my paper covered with small black specks, which I afterward found were due to the scraping of the metal joints of the clips along the wires producing fine metallic dust, which attaching itself to the collodion emulsion, soon turned the silver black. Moral: Use string.—W. E. W.

narrow angle of illumination, be our requirement, the problem of their forward transmission is one of extreme simplicity; but if, on the other hand, the greatest possible angle of illumination be the desideratum (and of course this is the case), then does the problem become slightly more involved. We cannot here institute a comparison between the methods adopted by lighthouse engineers in utilizing all their light and those demanded by the lantern, for in the latter case it is to be employed in the formation of an optical image, whereas in the former it is merely projected into space, and both direct light from a radiant, together with that reflected from either a holophotal or a parabolic reflector, are available. But while we cannot utilize so much of the light as in the lighthouse, we can use it to much greater advantage for our special purpose.

We now inquire the greatest angle of light possible to be got advantageously through a condensing system, for this lies at the root of the whole matter, and in doing so have to ascertain how near can the light be approximated to the first surface with safety. From innumerable trials with lenses of a thickness not too great and set with such a degree of looseness in the brass work as not to be cell-bound, I find that two inches may be considered as quite safe. When condensers crack, it is usually the result of their being too tightly burnished in their cells, brought too suddenly under the influence of the heat of the radiant, or being subjected to currents of cold air. I assume, of course, the perfect annealing of the glass of which they are formed. When this last point is dubious, it may be well to adopt the system employed by the Scotchwomen of a former period, who, when laying in a supply of tumblers intended for whisky toddy, invariably placed them in cold water, which was slowly brought to a boil, and then allowed to cool slowly, by which treatment immunity from subsequent breakage was believed to be ensured.

At this stage we proceed to analyze the functions of a lantern condenser—so-called. We find that these are (1st) the collecting, and (2d) the condensing of the light. Of these the former is much the more important. What we wish done is the collection of so many rays as to form a large angle, and their projection forward in as near an approach to parallelism as possible. Absolute parallelism cannot be obtained unless the flame were a point, instead of being as it is, a disc or patch having sensible dimensions of, say, quarter of an inch upward.

Some of the cheap French condensers (of which I would not speak disparagingly, for they render excellent service and are marvels at their price) transmit an angle of light of from 40 to 50 degrees, and a higher class of London-made articles claim, I understand, to embrace 60 degrees. But, by a slightly increased expenditure of optical means, it is possible to increase this angle to 95 degrees, which, I need scarcely observe, somewhat more than doubles the intensity of the illumination. Let us see in what way this is to be accomplished.

Kepler's law, as you all know, is that the focus of a plano-convex lens equals the diameter of the sphere of convexity. This is, of course, for parallel rays, and it is those we are dealing with at present; and we are also dealing with plano-convex lenses, these being the best for condensers, subject, perhaps, to a slight hollowing of the flat surface, of which I shall soon speak. Well, it is very evident that if we desire a large angle of light, the single Kepler won't do much for us, unless, indeed, it was made enormously thick—even hemispherical—when we would encounter two evils: first, the enormous spherical aberration consequent upon transmitting light through a bull's-eye; and secondly, the proximity of the said bull's-eye to the radiant, which not only emits light but heat—a heat which would quickly cause our bull's-eye to see stars and stripes. How, then, is it to be accomplished? By borrowing the ideas of the microscopist. Did any of you ever hear of a microscopic objective of even the most distant pretensions to wide angle being composed of one lens? Can you conceive of such a thing? Well, no more is it possible in our collecting system, which is analogous. We must have, at least, two lenses for our purpose. One of them—that near-

est to the light—must be $4\frac{1}{2}$ inches in diameter in order to catch up the 95 degrees of which I spoke. But this cannot render the rays parallel; still it transmits them to its colleague under such circumstances that it does so, the two lenses thus doing what no one singly could effect.

The first lens of the collecting system is comparatively thin, which, apart from any optical advantage, is useful in this respect, that it has to bear the first impact of the heat; and, as you can readily understand, this lessens the liability to fracture. It is only 16 millimeters ($\frac{5}{8}$ inch) thick in the center, is 8 to 9 inches focus, and is formed by preference of flint glass. The second element is 5 inches in diameter, and the radius of curvature being rather shorter, this, combined with its greater diameter, causes it to be proportionally thicker, being 28 millimeters ($1\frac{1}{16}$ inch) at its center, and 7 inches focus. This lens, too, should be made of colorless glass. The loss of light from absorption is but little, and I anticipate an objection that might be suggested as to this from oblique incidence. This is really so little as to be unworthy of notice, but it carries with it its compensation; for it occurs most at the thinnest portions of the lens where there is the least absorption, and thus aids in ensuring uniformity of illumination throughout the entire beam. But it may be reduced by rendering the first surface concave instead of plane, and retaining the balance of power by grinding the back surface on a tool of shorter radius. I at one time was madly in love with the meniscus form of lens for this purpose, but incited thereto by the experience of Dr. H. Morton, after many trials with lenses both plano and meniscus, and formed of different kinds of glass, from St. Gobain's crown to English flint, I arrived at the conclusion that the plane surface answered every purpose in an effective manner.

If the radiant were infinitesimally small, a parallel beam of a large collected angle could be transmitted with a singular degree of perfection for several yards. With a triple collecting system (that worked out by Dr. Charles Cresson, in which the first lens is a plano-convex $4\frac{1}{2}$ inches radius, the second a meniscus, respectively 30 inches and 6 inches; and the third a crossed lens of 52 inches and $8\frac{3}{4}$ inches radii), I projected across my bedroom a very tiny gaslight onto the dial of a French clock, which was thus illuminated a whole season. But such extreme nicety is not required in the practical working of the optical lantern, as, owing to the magnitude of the flame, two elements answer every purpose. The two that I have described should be mounted together as closely as possible, fixed permanently in the lantern, and must always be used together, and not separate. Until a compound collecting system of this nature is tried, one can form no idea of the capabilities of the lantern for certain scientific purposes, such as polarizing.

Let us now direct our attention to the condensing element of this optical system. We have seen that the two elements of the collecting portion must be fixed and inseparable. This, on the contrary, should be variable, and selected to suit the special end in view. Its form may be plano-convex, more especially if for use with long-focus objectives; but if the latter is to be short-focus, and the condenser of crown glass, then is the crossed form, in which the curves are as one to six, or two to thirteen, open to be preferred.

But, dealing as we now are with immergent parallel rays, it were folly to imagine that a condenser properly adapted for an objective of 12 inches focus will answer equally well for one of 6 inches. Bearing in mind Kepler's law, which, however, applies only to one kind of glass, and must not be held as applicable equally to the flint glasses, especially those of the denser sort procurable at the present day, I would say that for the long projection lenses of 12 inches to 15 inches focus, a plano-convex having a radius of curvature of 7 inches will serve every purpose; for an objective of 8 inches to 10 inches the radius may be $4\frac{1}{2}$ inches, while for one of 6 inches to 8 inches, 4 inches will suffice. But, as I have said, this latter may with advantage be a crossed lens, in which case the radius of the more convex side will be longer.

One word more before dismissing the condensers. Treat them with the most

scrupulous care, both in heating and cooling, and avoid allowing a current of cold air to play upon them during the cooling. With this precaution, superadded to having them set loosely in their cells, a fracture will rarely, if ever, occur.

Turn we now to the objective—the image former. First, its diameter, especially that of its posterior combination, must be sufficiently large to take in not merely the whole of the cone of rays emerging from the condenser, but by preference a little more. This permits of the utilization of a small portion of light radiated from the substance of the image itself.

A large back lens also permits it to be brought nearer to the picture, and this is advantageous, especially with the condensers of the common order, as it acts in condensing the scattered rays from those of this class, enabling also the light to be approached nearer to the condenser. The lens tube should be longer than in the case of its application to photography, for, unlike this, all it is required to cover is the very limited area comprised in a plate $3\frac{1}{4}$ inches square, minus the portion occupied by the mat. For the highest class of objective, it suffices that it be achromatic in the sense different from actinic, for, so long as the visual image is perfect, it matters not what becomes of the violet or chemical rays, or what relation they have to the luminous ones.

It is in the construction of a lantern objective of short focus that the skill of the optician is taxed, as it has to cover sharply to the margin with its full aperture, and under circumstances in which the slightest inequality in the definition is instantly detected. To a cultivated eye it is extremely unpleasant to see an image quite sharp in the center of the disc, and falling off rapidly toward the margin, or by racking in, securing marginal sharpness at the expense of the center. Of the various forms of objective to be met with in commerce, at any rate for those of medium short focus, I incline to give preference to that introduced ten or eleven years ago by J. H. Dallmeyer, judging by the performance of one of this class in my possession, made by Newton & Co. In it the elements of the back lens are separated to an extent which would prove hostile to sharpness in the case of one employed in producing a photographic image in the camera. If photographic lenses are to be employed in the lantern, those of the *carte-de-visite* (Petzval form)—that is, those corrected for flatness of field, even to the extent of there being slight astigmatism—are advantageous. One of the most satisfactory *short* focus objectives I ever used had a back lens $2\frac{1}{4}$ inches in diameter, the front lens being $1\frac{3}{4}$ inches. I gave a very great excess of negative spherical aberration to the back lens, and the front was a nearly plano-convex achromatic of short focus. This gave a field which was singularly flat, the definition at the margin quite equaling that in the center; but owing to the excess of aberration spoken of, the image did not quite equal in sharpness that obtained by the ordinary *carte-de-visite* lens with rounder field. Still, spectators seated at a distance of five yards from the screen were unable readily to appreciate that the definition was imperfect, for, as you know, even the crude brush-work of the scene-painter seems sharp when viewed from a distance.

In objectives of long focus there does not appear to be the same tax on the skill of the optician. Poor, indeed, must be the lens of 10-inch, 12-inch or 14-inch focus that will not cover sharply and uniformly a plate 3 inches in dimensions.

[From Photography.]

DYED LANTERN SLIDES.

BY ANDREW PRINGLE.

At the International Congress of Hygiene, held in London in August last, we saw some lantern slides of bacteria and other microscopic objects stained, to all appearance, with aniline dyes and other coloring agents, commonly used by microscopists and others working on what are sometimes called "microchemical" problems. What

struck and interested us most in these slides was the fact that though the details on the plates were vividly stained in every part, the ground seemed to have been kept singularly clear and free from diffuse staining. We resolved, therefore, to make a trial of a process which promised so much, not only for naturalistic rendering on the screens of stained microscopic objects, but also for helping us to obtain slides of ordinary objects highly colored, yet clear in the high lights. On inquiry, we found that this process had been published in some French photographic papers by him whom we take to be the inventor of the process, Mons. A. Lumière, of Lyons.

The principle of Lumière's process is as follows. An image is "developed" from carbon tissue in the usual way on a glass plate; the film of gelatine bearing the image is to be as thin as possible, so that, in fact, the details of the picture shall be embedded in the thinnest layer of gelatine, and the highest lights shall be represented by the glass of the plate alone. If these *desiderata* are obtained, we can use any stain that will color gelatine without affecting the glass. The result will be an image in color, and clear glass, in the respective parts of the slide.

Now, at the outset, we had misgivings about using the "carbon" process for slide making, for we knew by experience that the image so obtained is not, as a rule, sharp enough in its outlines to give a good effect on the screen, but we saw that in this particular process this failing would at least be reduced to a minimum, and so it proved to be. The slides are not quite so sharp in outline as ordinary slides on gelatine plates, but when we say that even microscopic objects are delineated on the screen with fair definition, it will be understood that this process is not to be condemned without fair trial; the more so as we ourselves have not had great experience of it, and do not pretend to have exhausted the process.

The first thing to do is to obtain a carbon tissue having a fairly thin film, and very little pigment indeed; the less the better, provided the film is not so transparent as to allow so much light to pass as will make the film insoluble right through in printing. The color of pigment may be made to depend on the stain we propose to use in the end, but we found a reddish pigment to answer well for most of the dyes we used, but specially for red dyes such as carmine. We also had a sample of a bluish pigment, which did well to be followed by blue or violet dyes.

Those who have not tried to develop tissue on plain glass will not easily realize how difficult it is to keep the image on the plate; and we found that, clean plain glass plates as we might, there was always at least a tendency for the film to come bodily off the glass. So we fell back on ground glass as recommended by Mons. Lumière. We cut our ground glass into plates $3\frac{1}{4}$ inches square, and we cleaned them by soaking them for a night in—

| | |
|------------------------|--------|
| Potass bichromate..... | I part |
| Sulphuric acid..... | I " |
| Water..... | 10 " |

After this they were washed in running water, then in filtered water, and then were carefully cleaned with a cloth or skin.

To sensitize the tissue we used the ordinary solution of the Autotype Co., 1 part of their salt to 20 or 25 of water. We plunged the tissue in this for about three minutes, till it lay flat, and then laying each sheet on a glass slab, we gently squeegeed out the superfluous liquid and hung up to dry over night.

To provide a "safe edge" for the negatives, which is of course necessary, we used slide masks, and we cut each piece of tissue to exactly the size of our lantern plate. As usual in carbon printing, an actinometer is necessary, and we used the simple one in the shape of a tiny box having in it a slip of sensitive albumen paper, and on its lid a "tint." It is important to note that we found one "tint" enough for all but the densest negatives, and two tints were enough for any of our negatives. Over-printing must be carefully avoided or the whole film will become insoluble.

After printing, the tissue is cut a little smaller each way than the lantern plate. This, too, is important. The tissue is then plunged into cold water till after curling face inward it just begins to flatten itself out, and at that moment a ground glass plate is slipped under the tissue and the two are brought up in contact, the gelatine to the ground side of the plate. Gentle squeegeeing is then done, and a piece of blotting paper is placed on top of the tissue, followed by a glass plate and a small weight. We get a pile of about a dozen plates and films in this fashion, and then we place the plates in hot water, beginning, of course, with the bottom of the pile. The water may be about 90 degrees Fahr.—not more at first. Soon a little pigment will ooze out at the edge of the paper, and then a knife point may be used to raise one corner of the paper, after which it should strip off the plate easily under water if all has been right. Hot water is now to be laved onto the plate till the soluble gelatine is all washed away, and a very faint image alone remains. The heat of the water may be increased to about 120 degrees or 130 degrees, but preferably not more. The finished image should be only faintly visible. The plate is now washed gently in cold water, and is at once placed in "neat" methylated spirits. After about ten minutes in spirits the plate is rinsed in water, and the dye applied by pouring on.

Mons. Lumière recommends some of the common dyes used in microscopical work, and he suggests strengths from 1-100 to 1-500, water being generally the solvent. We have used just such dyes as we had handy, finding the best strength by trial. It is easy to wash out almost any of the dyes used, and we pour on only a little and then examine the result. It is well, we find, to use the dye strong at first, and to use it for a short time—a few seconds. Among the stains we have used are the following: *Methyl blue*, sat. watery solution. *Methyl green*, ditto. *Fuchsin*, Neelsen's formula diluted with equal measure of water. *Gentian violet*, strength unknown. *Lithium-carmine*, the ordinary formula of Orth, sold by all opticians who deal with microscopy. This answers the best of all we have tried. It gives a grand, bright, discreet stain, and washes out gradually, which is an advantage. Logwood and hæmatoxylin are diffuse, and we do not like the results. Besides carmine, our favorites are methyl blue and fuchsin, as above.

It is not quite easy to make a ground glass plate transparent, and this puzzled us for a time, for the formula given by Lumière appears to be a misprint. We had to saturate dammar in benzole in order to get the best result, and we effected the saturation at body heat—about 98 degrees Fahr. Or we may take a bottle of the dammar varnish sold by opticians, and dilute it with its bulk of benzole. This varnish is to be applied cold to the plate, also cold. Mr. Lumière's slides, of which he sent us samples very politely, are as clear as plain glass; ours are not quite so good, but show well in the lantern.

We may save some reader trouble by saying that it is not much use trying, as we did, to find some *substratum* for the plates, in the hope of using plain glass. Whatever *substratum* we used took the stain and spoiled all. Nor do we think it a safe system to use plain glass, however well cleaned—sometimes all goes well, *sometimes it doesn't!*

[From The Photographic News.]

COMPOSITE PHOTOGRAPHY: A NEW METHOD.

BY W. JEROME HARRISON, F.G.S.

GLANCING at some photographs which lay scattered on my study table the other day, I was surprised to see among them the face of a lady (my wife's sister) of whom I had thought we did not possess a likeness. Picking up the supposed portrait, I was surprised to find that it consisted of two distinct photographs—the upper one that of my wife, and the lower one of my daughter—which had combined to form a composite photograph which certainly had a distinct resemblance to the relative whom I

have named. This accident led me to study, in more detail than I had previously done, the subject of composite photography, and to apply to it a new method based upon my discovery.

Composite photography was discovered by Mr. Francis Galton, F.R.S., about the year 1878. It has been applied almost exclusively to composite portraiture, although it is by no means limited to this one application. Briefly stated, the idea consists in adding together several photographs so as to obtain a single photograph which shall represent the "mean" or average of the pictures of which it is compounded. Thus, Galton has shown that by compounding the photographs of numerous thieves, murderers, etc., we get the typical face of the criminal classes; from a series of photographs of the patients in the Royal Hospital for Consumption, a composite portrait was secured which doctors agree in praising as being the very type of a patient suffering from this disease; and so on.

Galton describes two methods by which he obtained composite photographs.

In the first of these he used what we may call a copying camera. Having obtained a number of photographs—either profile or full-face for choice—of the various persons of whom he desired to make a composite photograph, these were placed—one at a time—at a convenient distance in front of the camera, and their images were allowed to fall, in succession, upon a dry plate. Supposing that the composite was to be made from four photographs, and that the proper time of exposure was forty seconds, then the image of each photograph was allowed to fall upon the dry plate for ten seconds. The plate was then developed, and a "composite negative" was secured, from which, of course, "composite positives" were obtained by printing in the usual way.

In 1881 Galton discarded this method, and substituted for it a plan by which the original negatives were copied one by one, by means of transmitted light, a single "compound positive" being thus obtained.

Other methods of compounding photographs which naturally suggest themselves are by means of the stereoscope; or by using the photographs as slides in two or more optical lanterns, and causing the images to coalesce on a screen.

The objects of which it is intended to produce composites must be of the same kind, and must bear a general or generic resemblance to one another. These conditions are well fulfilled by the human face. It is startling to see how well almost any two faces will combine to form a composite portrait. But, as a rule, a much better composite is obtained from the combination of four or six portraits than of two only. In the case of families, the most pleasing and interesting results can be produced by combining the photographs of the various members.

The method of composite photography which I shall now describe has the great advantage that it is possible to produce the largest possible number of variations or combinations from any given number of photographic negatives or positives; and that with no more trouble than is involved in shuffling a pack of cards.

During the last twelve months I have used large numbers of celluloid films for making positives as well as negatives. A special kind of semi-opaque celluloid is usually employed for making the positives upon; but I have also frequently used for this purpose the thin transparent celluloid intended for negative work. The Eastman film for roller slides is of this kind, and is less than the three-hundredth part of an inch thick, and is quite as transparent as glass. But celluloid can be obtained much thinner even than this, and for my purpose it can scarcely be too thin, so long as it retains a fair amount of toughness.

The two photographs referred to in the first paragraph of this paper had each been made upon a thin sheet of transparent celluloid. Being each three-quarter face portraits and approximately of the same size, they had, when accidentally superposed, combined to form a composite which, curiously enough, suggested more a third member of the family than either of the individuals of whose portraits it was actually formed.

I will now briefly describe the method by which I have lately made several successful series of composite portraits.

1. The celluloid films can either be used (cut to size) in the ordinary dark slides (a piece of cardboard being placed behind each film to keep it flat and in place), or a roll-holder may be employed.

2. Either a profile or a full-face portrait should be taken, and I prefer the latter; the eyes should then (in the full-face) be directed toward the lens of the camera; or (in the profile) toward a fixed object or mark at right angles to a line connecting the sitter with the camera.

3. The camera should be leveled, and the lens should be at the same height as the eyes of the sitter. A head-rest will be found useful. In want of a studio, any room with large windows (on one side only) and facing the north, will answer well. Let the face be pretty equally lighted, and use reflectors (a white sheet, cardboard, etc.) to illuminate any dark shadows under the nose and eyes.

4. Use a long focus lens by preference. The camera ought to be at least ten feet from the sitter.

5. The portraits should be taken the long way of the plate; and the size of head which is recommended is that which gives a distance of half an inch between two horizontal lines, one drawn through the mouth and the other through the pupils of the eyes. To effect this, find the center of your focusing glass, and then draw lightly with a lead pencil upon the ground glass one line (for the eyes) a quarter of an inch above it; and a second (for the mouth) a quarter of an inch below it. Make the eyes and mouth agree with these lines. Draw also a vertical line through the center of the ground glass. This line will bisect the line passing through the eyes, and will itself run down the ridge of the nose.

6. As faces are of different sizes, and their owners of different heights, etc., it will be necessary to adjust the sitter so that all the faces shall occupy, as nearly as may be, the same area upon the focusing glass. A pianoforte stool provides a useful seat, as it can be raised or depressed to suit tall or short people. It is best not to move the camera itself, but to move the sitter slightly until the eyes and mouth coincide, when in focus, with the average position for those features as marked upon the ground glass. A plain and rather light colored background should be used, and this should be several feet behind the sitter, so as to be well out of focus.

7. A large stop, say $f/8$, should be employed. There should be no attempt at "expression" on the part of the sitter; all the features should be at rest. Isochromatic films are an advantage.

8. All the negatives for any one composite should be as similar in density, etc., as possible. To this end the exposures should rapidly succeed each other on some day when there is a really good light; they must also be of equal duration. For giving a succession of exposures of exactly equal duration, Lancaster's Chronolux shutter is a valuable instrument; although the longest exposure it gives is but three seconds. Still, with $f/8$ and rapid isochromatic films, this exposure is sufficient in really well lighted rooms or in studios. It would be possible, however, to have this shutter altered so as to be capable of giving much longer exposures; but it is easy to time longer exposures by the watch, or by the motion of a pendulum, or (with practice) by simply counting.

Development is best effected by soaking all the exposed (celluloid) films in distilled water for ten minutes, and then developing them simultaneously in a large dish with plenty of solution. Development can be stopped instantly by immersing the films in a weak solution of acid sodium sulphite.

Where the faces are symmetrical, and have been taken facing the camera, the closest possible approximation is produced by placing the coated sides touching each other. As an experiment the same can be done with portraits upon two glass plates; but by this procedure one of the faces is literally reversed, and it is applicable to a pair of photographs only.

Where a large number of individual portraits—fifty or more—have to be compounded, it will be best to first form composites of these in groups of six or eight, and then to compound these primary composites into a single secondary composite.

When the celluloid films have been fixed, washed and dried, we have a set of negatives which can be compounded as we please in order to furnish a positive print. Suppose the negatives to be six in number; we place them one upon the other, and then view them by transmitted light so as to see what kind of a "compound negative" they make. The features should be brought to "register" as nearly as possible, and a print may then be taken from the set by placing them upon a sheet of glass in an ordinary printing frame.

But the plan which I prefer is to make a positive print upon thin transparent coated celluloid from each negative. We then have a series of transparencies, which only need to be superposed in order to produce as many combinations as the number of individual prints is capable of. By placing the prints between two thin sheets of glass, held together by strong rubber bands, the "compound positive" so formed can be examined at leisure.

Say the six prints represent three brothers and three sisters of the same family. Then we can study the appearance of the compound portrait resulting from the superposition of the three females alone, or of the three males alone, or of any two, four, or the whole six.

It is this interchangeability of both negatives and positives which I consider to be the chief merit of this new method. Moreover, as each negative and each positive is separate and distinct, we are sure that each is capable of doing its share of the work and producing its proper effect, and each is also available for any other purpose.

In the above notes I have only given the necessary instructions in very general terms, and so that any one with a small camera can experiment for himself. Cameras which have the focusing glass on the top (as the "Reflex," the "Vanneck," etc.) will be found very useful for this work.

While the amateur photographer may make composite portraits of his family and his friends simply for "fun," and while the scientist uses them for the collection and comparison of races and nations, it seems not impossible that professionals may find in them a source of profit. Whenever they received a visit from a "good customer" it would be but little extra trouble and cost to take the full-face portrait and the profile—or the former only—required for composite portraiture. As these accumulated, sets could be made up; and for "family sets of composites" there would be, I feel sure, a steady demand. Similar sets of public characters ought to sell well in the open market—the Royal family, the Conservative leaders, the Liberal ditto, the judges, etc. I believe that if any well known London firm had offered for sale such sets (each set comprising from four to six positives on thin transparent celluloid) during the recent Christmas season, there would have been a good demand for them. Local photographers might prepare similar combinations of town councillors, doctors, etc.; and, if the enterprise did not bring in much money, it would certainly be a good advertisement.

It is a rather curious thing that a composite is invariably better looking than any of its individual components. Some amusing incidents occasionally attend the production of composites. A composite portrait of two sisters was intentionally left where it was certain to be seen by their mother (who was ignorant of its production). Picking it up, she remarked, "Why! here's a new portrait of Clara!" (one of the sisters). "But stop! it's Jane!" (the other sister). "No! it's both of 'em—" (pause)—"Now I should just like to know who's been mixing of 'em up like this!"

Now, I hope every photographer who reads this article will try this simple method for composite portraits. You want nothing but a packet of quarter-plate, or 5 x 4, or half-plate celluloid negative films. Take portraits in the manner described, of any

three or four members of your family, or of your friends' families, and print positives from them on the remaining films. Printing can be done by contact in the usual way, just as bromide paper is printed, only with a much shorter exposure (say five or six seconds at two feet from a gas-flame). You may do it only as a "photographic joke," or for a pastime, but it is very likely to lead you to a consideration of the method as a scientific application of photography.

TABLES FOR PREPARING PERCENTAGE SOLUTIONS.

BY C. C. SHERRARD, PH.C.

WITH a view of economizing time, the following tables for preparing percentage solutions have been carefully figured out. That there is need of such a table is shown by the frequent requests for information of this sort. The table is simple and requires but little explanation. There are two tables, the first giving percentage solutions, the second gives parts in 1,000 or 5,000. The use of the first is as follows: Run down column one until the correct percentage wanted is found, then move to the right along the line until the column is found giving the amount of fluid measure to be made up; at the intersection will be found the weight of salt required. It must be remembered that this is the amount of water to take, and not q. s. water to make the volume; also that these tables are true only for water, and not for alcohol or other fluid. The second table is similarly employed:

FOR MAKING ANY QUANTITY OF PERCENTAGE SOLUTIONS.

| | For each 1 fluid ounce of water take of the salt | For each 2 fluid ounces of water take of the salt | For each 3 fluid ounces of water take of the salt | For each 4 fluid ounces of water take of the salt | For each 5 fluid ounces of water take of the salt | For each 10 fluid ounces of water take of the salt | For each 16 fluid ounces of water take of the salt |
|-----------------|--|---|---|---|---|--|--|
| To make | Grains. | Grains. | Grains. | Grains. | Grains. | Grains. | Grains. |
| 1 per cent.... | 4.557 | 9.114 | 13.671 | 18.228 | 22.785 | 45.57 | 72.912 |
| 2 per cent.... | 9.114 | 18.228 | 27.342 | 36.456 | 45.570 | 91.14 | 145.824 |
| 3 per cent.... | 13.671 | 27.352 | 41.013 | 54.684 | 68.355 | 136.71 | 218.416 |
| 4 per cent.... | 18.228 | 36.456 | 54.684 | 72.912 | 91.14 | 182.28 | 291.648 |
| 5 per cent.... | 22.785 | 45.57 | 68.355 | 91.14 | 113.925 | 227.85 | 364.56 |
| 10 per cent.... | 45.57 | 91.14 | 136.71 | 182.28 | 227.85 | 455.7 | 729.12 |
| 15 per cent.... | 68.355 | 136.71 | 205.065 | 273.42 | 341.775 | 683.55 | 1093.68 |
| 20 per cent.... | 91.14 | 182.28 | 273.42 | 364.56 | 455.70 | 911.4 | 1458.24 |
| 25 per cent.... | 113.925 | 227.85 | 341.775 | 455.70 | 569.625 | 1139.25 | 1822.80 |
| 40 per cent.... | 182.28 | 364.56 | 546.84 | 729.12 | 911.4 | 1822.8 | 2916.48 |

FOR MAKING ANY QUANTITY OF SOLUTION WHEN STATED IN PARTS PER 1,000, 100, etc.

| | For each 1 fluid ounce of water take of the salt | For each 2 fluid ounces of water take of the salt | For each 3 fluid ounces of water take of the salt | For each 4 fluid ounces of water take of the salt | For each 5 fluid ounces of water take of the salt | For each 10 fluid ounces of water take of the salt | For each 16 fluid ounces of water take of the salt |
|-----------------------|--|---|---|---|---|--|--|
| To make a solution of | Grains. | Grains. | Grains. | Grains. | Grains. | Grains. | Grains. |
| 1 in 1,000..... | .4557 | .9114 | 1.3671 | 1.8228 | 2.278 | 4.557 | 7.291 |
| 1 in 500..... | .9114 | 1.8228 | 2.7342 | 3.6456 | 4.557 | 9.114 | 14.582 |
| 1 in 400..... | 1.139 | 2.278 | 3.4177 | 4.557 | 5.695 | 11.392 | 18.228 |
| 1 in 300..... | 1.367 | 2.735 | 4.1013 | 5.4684 | 7.291 | 15.19 | 24.304 |
| 1 in 200..... | 2.2785 | 4.557 | 6.8355 | 9.114 | 11.39 | 22.785 | 36.456 |
| 1 in 100..... | 4.557 | 9.114 | 13.671 | 18.228 | 22.785 | 45.57 | 72.912 |
| 1 in 50..... | 9.114 | 18.228 | 27.342 | 36.456 | 45.57 | 91.14 | 145.824 |
| 1 in 25..... | 18.228 | 36.456 | 54.684 | 72.912 | 91.14 | 182.28 | 291.648 |
| 1 in 10..... | 45.570 | 91.140 | 136.710 | 182.280 | 227.85 | 455.70 | 729.120 |
| 1 in 5..... | 91.14 | 182.28 | 273.42 | 364.56 | 455.7 | 911.4 | 1458.24 |

Providing other amounts of a solution than those given in the tables are required, it will be a very simple mathematical calculation to determine the amount of salt required for a specified amount of solution. For example, if 8 fluid ounces of a 4 per cent. solution is required, follow down the 4 fluid ounce column until opposite 4 per cent.; the number of grains required are 72.912 grains. Now, to make 8 fluid ounces just twice as much (145.824) grains are required. In a similar manner, any solution of any percentage strength may readily and easily be found by consulting the proper column and per cent.

In further explanation, we may say that, in giving the above figures, the resulting solution is absolutely correct as regards percentage composition, though it may measure slightly more than the water taken, owing to the increase in volume which always takes place in some degree when a solid passes into a solution in a given amount of liquid. This expansion is not appreciable for small amounts of the solid, say up to 5 per cent., but at 25 per cent. or more it may be noticeable. However, as before stated, this expansion has been considered, and the resulting solution, notwithstanding the increase in volume, is correct for the percentage given.—*New Idea (Abstract)*.

HOT WATER AND AMERICAN ARISTO.

THE recent and important discovery of a hot water treatment for American Aristo collodion paper reduces the cost, labor and time of manipulation below that of albumen. Heretofore it has been necessary to employ an alcoholic solution to soften the film, the prints being dampened and flattened first in cold water, then after being separated and soaked in the softening solution an additional washing and separation through four or five waters was required before reaching a condition to tone.

Even with this comparatively tedious and expensive manipulation, the great saving of such a reliable ready sensitized paper and the beautiful results obtained have made it of so great advantage to the fraternity that it has reached a sale rarely if ever equaled by a photographic product in the length of time it has been on the market.

Now that the manipulation has been so simplified, Aristo will make still greater and more rapid strides.

All that is required now is to heat water to a temperature that feels decidedly but not uncomfortably warm to the hand. Pour five waters on and off without handling the prints, then tone, fix and finally wash. Any good albumen toning bath will yield fine results, though only half the gold should be used with the same bulk of water and alkali enough to make the bath neutral or very slightly alkaline.

The writer witnessed a batch of one thousand prints worked through by hot water at a prominent photographic establishment in this city, which uses Aristo exclusively. There was nothing in the manipulation that was not simplicity personified. There is one important feature, however, that while perfectly simple, differs from albumen treatment, and which if omitted would cause no end of trouble. American Aristo prints, if thrown into the first wash water after the manner of albumen manipulation, would curl to the dimensions of so many pipe stems, and it would be impossible after they had once curled to straighten them again. On the other hand, if they are dampened while in a flat condition, they will remain flat throughout the subsequent manipulation. A shallow, smooth bottom tray is, therefore, taken, and warm water poured in sufficient to

barely cover the bottom of the tray. The prints are then taken one by one, and pressed flatly to the bottom, to which they stick damply. They are piled in an irregular, solid, flat mass all over the bottom of the tray, one overlapping the other in layers, and when all in look like prints sticking to the mounting glass. After one layer of prints has been laid in after this manner and they have absorbed the water, a little more is added for the second layer, and so on until all are in. The tray is now stood on end and the water pressed thoroughly out of the prints with the flat of the hand. This ends all handling of the prints and they will remain thoroughly flat and straight throughout the other four hot water baths. In the four succeeding hot water baths, sufficient hot water is poured in to nicely cover the batch in each instance, and the tray rocked gently to give the warm water a chance at the prints, which will slightly separate. They are allowed in this manner to soak five minutes in each water. The tray is inclined and the water and free silver pressed thoroughly out before fresh water is poured in.

On pouring off the last hot water, cold water is admitted to the tray, in which the prints are allowed to remain until taken out to tone. They handle as flatly as could be wished for, through the toning, fixing and final wash.

As before stated, any good albumen bath will yield elegant results, or amateurs can, if they prefer, use a combination toning and fixing bath. The toning bath should be much weaker in gold than with albumen, and for alkalinity should turn red litmus paper very slightly blue.

The fixing bath is also very much weaker than for albumen—1 ounce saturated solution of hypo to 10 ounces of water, or twelve hydrometer test, and fix twenty minutes.

Any one now can handle "Aristo" successfully without the aid of demonstration, or loss in experimenting.

FIFTH ANNUAL JOINT EXHIBITION.

PHOTOGRAPHIC SOCIETY OF PHILADELPHIA, SOCIETY OF AMATEUR PHOTOGRAPHERS
OF NEW YORK AND BOSTON CAMERA CLUB.

RULES.

THE Committee of the Boston Camera Club appointed to conduct the Fifth Annual Exhibition has the honor to announce the following rules which have been adopted :

Medals and diplomas distributed among the various classes of work shall be awarded by a Board of Judges chosen by the Committee of Arrangements.

In making their selections, the judges shall give due recognition to work in any of the various branches or processes of photography which may show unusual merit. The aid of experts may be called in when special information is necessary.

The number of medals awarded shall be left at the discretion of the Board of Judges, dependent upon the amount of work of high merit exhibited, but shall not exceed twelve.

The number of diplomas shall be entirely within the discretion of the Board of Judges.

Awards may be made for an entire exhibit or for any part thereof. The

judges may specially designate any particular picture for which a medal is given.

All photographers are at liberty to compete.

The judges will give preference, other things being equal, to work done entirely by exhibitor.

The members of the Board of Judges shall not compete for awards, nor be connected in any way with the management of the exhibition.

The decision of the Board of Judges shall be final.

No picture which has once been exhibited in competition at a previous joint exhibition, held under the auspices of the Boston Camera Club, will be received for competition.

No picture will be received "for exhibition only," unless by special consent of the Committee of Arrangements.

No pictures which have taken prizes elsewhere shall be so designated until after the awards have been announced.

All pictures excepting those from foreign exhibitors must be framed (with or without glass, at the option of the exhibitor).

Pictures from foreign exhibitors should be sent, carriage prepaid, to Boston Camera Club, care of J. Herbert Seaverns, 5 East India avenue, London, E. C., who will act as forwarding agent for the exhibition. They may be sent unmounted, and will be mounted for exhibition by the Committee of Arrangements, free of charge.

The Committee of Arrangements reserve the right to reject the whole or portions of any exhibit offered.

Entries of all exhibits must be made in duplicate, on blanks issued by the Committee of Arrangements, giving, for catalogue purposes, etc., information on the following points :

Number and size of frames.

Amount of wall space required.

Total number of pictures.

Subject or title of each.

Lens and plate used for negative.

If for sale, price.

Name, address and society of exhibitor.

The exhibitor's name and address, also a number corresponding to the descriptive number upon the entry form, shall be clearly written on the labels provided, which shall be attached to the back of each frame.

When two or more prints are mounted in one frame, a designating letter shall be placed under the center of each print, and all letters so placed shall appear in the entry form opposite the title of their respective pictures. All details as to maker, subject, etc., will appear in full in the catalogue, and none of this information should appear upon the frame or picture.

No picture may be withdrawn before the close of the exhibition.

All pictures must be sent at owner's risk, prepaid, and delivered to the Committee of Arrangements at the place by them indicated.

The Committee will not be responsible for any loss or damage that may occur to exhibits while in its charge, but will use all reasonable care to prevent such occurrences; and at the close of the Exhibition will repack each exhibit and ship as directed by the exhibitor, other charges to be collected by the carrier of the exhibitor.

Advertising in any form in connection with an exhibit is strictly prohibited.

A charge shall be made for wall space at the rate of twenty-five cents per square foot (the minimum charge being one dollar) to all except members of the Photographic Society of Philadelphia, and the Society of Amateur Photographers of New York, Boston Camera Club, and foreign exhibitors.

The amount of charge for wall space must be inclosed with entry form to the Committee of Arrangements.

If any of the pictures entered are not hung, a due proportion of the charges will be returned.

A commission of 25 per cent. on all sales will be retained.

Models of photographic apparatus will be received only by special arrangement with the Committee.

Lantern slides must not exceed $3\frac{1}{4}$ inches high, and the diagonal line of the mat opening must not exceed $3\frac{3}{4}$ inches in length.

Lantern slides will only be eligible for competition and award when both the negatives and slides are the work of the exhibitor. Not less than six should be sent by any one exhibitor for competition. A list of the slides and particulars as to the process employed should be stated on the entry form.

Later rules which may be adopted will be duly published.

SUGGESTIONS.

Lantern Slides.—Special endeavor will be made by the Committee of Arrangement for the proper competition and exhibition of slides by the oxyhydrogen lantern during the exhibition.

Negatives.—Negatives and transparencies may be entered for exhibition, and should be suitably framed.

Photo-mechanical Prints and photographs colored by scientific or mechanical means will be admitted for exhibition, but not for competition, and should be limited in quantity.

Special Processes.—Any applicant submitting illustrations or specimens for exhibition made by a special process will be requested to furnish a description and particulars concerning the same.

Entry Forms.—Blank entry forms and blank labels to be placed on the back of frames will be furnished on application.

Reception of Exhibits.—All exhibits (including pictures, negatives, transparencies, lantern slides, apparatus, and appliances, etc.) must be delivered (carriage prepaid) on or before April 27, 1892, to COMMITTEE OF ARRANGEMENTS, PHOTOGRAPHIC EXHIBITION, BOSTON ART CLUB, *Corner Dartmouth and Newbury Streets, Boston, Mass.*

Correspondence.—All correspondence respecting the Exhibition should be addressed to

GEO. M. MORGAN,

Chairman Committee of Arrangements,

50 Bromfield Street, Boston, Mass.

OUR ILLUSTRATION.

As a frontispiece illustration to this issue of the BULLETIN we take great pleasure in presenting our readers with a fine portrait of the late William Notman, of Montreal. It is a speaking likeness of that genial gentleman.

ANTHONY'S Photographic Bulletin.

EDITED BY

Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by ARTHUR H. ELLIOTT, Ph.D., F.O.S.,
and a corps of practical assistants.

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Advertisements should reach us not later than the Saturday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, six, twelve or twenty-four issues.

E. & H. T. ANTHONY & CO., Publishers.

LOWELL CAMERA CLUB.

A MEETING of the incorporating members of the Lowell Camera Club was held in the Board of Trade rooms February 1st to take formal action for organization and incorporation. A constitution and by-laws, that had been revised according to recommendations made at the last meeting, were adopted. This constitution provides for an Executive Committee that shall have full control of the club's affairs, and a membership committee which shall have control of the election of members. In this way members will be relieved of the care of the details of club business and be free to enjoy the privileges of the clubrooms.

The Executive Committee consists of the following officers who were elected at this meeting: Paul Butler, President; W. P. Atwood, 1st Vice-President; W. E. Badger, 2d Vice-President; A. S. Guild, Treasurer; G. A. Nelson, Secretary; W. H. Dodge, Librarian; Geo. H. Stevens, F. T. Walsh, Charles Runels, Directors; R. F. Hemenway, Chas. J. Glidden, Arthur Staples, William Connor, Philip R. Hovey, Membership Committee.

The Committee on Rooms and Furnishings reported that they had decided that the room in the new Runel's block on Merrimack street

is the best suited for the purposes of the club of any of the rooms examined. It is 20 x 28 feet. This room could be partitioned and fitted up in such a manner as to provide all necessary accommodations for members, affording many conveniences that could not be obtained by individuals without great expense.

There was a lively interest in the proposed plan submitted by the committee, which was accepted with some modifications, and the same persons were elected to take the matter in hand and complete the necessary business. Application blanks will soon be ready for all desiring to become members. There is already a guaranteed membership of between forty and fifty members. It seems reasonable to assume that early in the spring Lowell will have a headquarters for amateur photographers that shall be of great value to all interested in this most fascinating means of recreation.

SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

AT an exhibition of lantern slides, held at the rooms of the Society of Amateur Photographers of New York, in West 38th street, on Friday evening, February 12th, were shown a selection from the work done by William B. Post, Esq., during a three months' sojourn in Japan in the summer of 1891. The exhibition included views taken in Yokohama, Tokio, Kyoto, Shiznoka, Kobe and Osaka. Also scenes in Gifu and Nagoya, where the recent earthquakes occurred. There were portraits of the "mousmes" and other natives, and pictures of farm and city life in the great island of Nippon.

Bibliography.

THE PHOTOGRAPHIC TIMES FOR 1891. New York: The Photographic Times Publishing Association.

This handsomely bound volume now adorns the shelves of our library; and we take this occasion of expressing to the donors our gratitude. It is a well filled tome and worthy of the editor and his associates.

WILSON'S PHOTOGRAPHIC MAGAZINE FOR 1891. Edward L. Wilson, Ph.D. New York: Edward L. Wilson, Publisher.

We are in receipt of two bound volumes of this valuable publication and our thanks are due to the publisher for it. It is tastefully bound and well gotten up, and the subject

matter is both timely and interesting, making it a welcome addition to our collection.

PHOTOGRAPHIC MOSAICS. Edward L. Wilson. New York, 1892.

This well known Annual is again on our table, and is truly what it purports to be, "An Annual Record of Photographic Progress," and the art that gives it birth has no reason to be ashamed of it. The paper and print are fully up to the standard, and we are glad to have it upon our table. The illustrations are numerous and well executed, making the volume a gem.

THE SCIENTIFIC AMERICAN CYCLOPEDIA OF RECEIPTS, NOTES AND QUERIES. A. A. Hopkins. New York: Munn & Co.

It is impossible within the limits of a book notice to give more than an outline of the features of this admirable work.

Those engaged in almost any branch of industry will find in this book much that is of practical value in their respective callings. It contains within its 680 pages 12,000 receipts, embodying the results of theoretical and practical knowledge of the workings of almost every branch of industry. We cheerfully recommend it as a useful and almost indispensable addition to every library, including our own.

AGENDA DE L'AMATEUR PHOTOGRAPHE. Paris: Société Générale d'Éditions.

Addressed especially to the amateur photographer, this little volume tries to inculcate, first, completeness of record; second, systematic arrangement of each record, to make them useful and accessible. If through carrying this little book, for it is hardly more than that, the owner learns these two lessons he will be repaid a hundred fold his outlay. It concludes with a brief summary of developing formulas and tables of weights and measures.

ÉTUDE COMPLÈTE SUR LE DÉVELOPPEMENT ET LES DÉVELOPPEURS. Par L. Mathet. Paris: Société Générale d'Éditions, 1891.

To the thoughtful and reasoning photographer we would especially commend this little work. Within its 90 pages there is much to learn, and but little, if any, superfluous matter.

It treats, first, of sensitive surfaces and the action of light upon them, and the results produced by development. Next, the dark-room and its management, the different kinds

of developers, the choice of a developer, and the influence of temperature upon development. It cannot fail to be of practical use to amateur and professional.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. Correspondents will please remember this. No attention will be paid to anonymous communications.

Q.—A. A. S. writes: Can you give me the address of a reliable firm in the United States where I can buy lantern slides made by J. Levy & Co., successors to Ferrier & Soulier, Paris. By answering through the columns of your valuable paper, the BULLETIN, you will confer a favor.

A.—We would suggest that you apply to the publishers of the BULLETIN, who can obtain them for you.

Q.—C. S. writes: Do you know of any publication that treats of making the different colors of gold for china decoration? If so, please be kind enough to let me know, and I shall esteem it a great favor.

A.—There is a journal published in New York City called "The China Decorator," which, we think, would probably furnish you with the information you require, or you might consult the pages of the "Art Amateur," also published in this city.

Q.—W. W. S. writes: I want to find out the particulars of Warnerke's sensitometer scale, what his standard is, and what the difference between successive numbers may be. If you can tell me where I can find this information I will be much obliged to you.

A.—Warnerke's scale consists of a piece of glass divided, say, into thirty equal squares, each of which are numbered. On square number one is pasted one sheet of papier minérale or French onion skin paper; on square number two there are two thicknesses of this paper, and so on, up to the thirtieth square, which is covered by thirty thicknesses. The mode of operation of determining the sensitiveness of a given plate is, roughly speaking, as follows: A square of some material of the same size as the scale is covered with luminous paint. This is exposed for a certain time to a light of known intensity. The scale

is placed upon the plate whose sensitiveness is to be determined, and upon it (the scale) for a certain length of time is placed the square of luminous paint. This operation is of course conducted in a darkroom. The plate is now developed, and the number of the highest square through which the light from the luminous paint affected the plate is taken as the sensitometer number.

Q.—A. F. R. writes: I am about to fit up a new studio and am puzzled as to its lighting. I am anxious to have one of the best lights that can be made. My operating-room will be 18 x 39 feet, and 12 feet high, with a northern exposure. The questions I wish solved are as follows: The best size for the lights; height of side light; angle of sky-light; the size and quality of glass best adapted for the purpose. I have talked with other photographers, but have not been entirely satisfied, either with my own knowledge or with their advice, as our opinions have varied considerably. I am a subscriber to the BULLETIN, and find it indispensable as a guide upon every subject of importance, and therefore write you to decide these questions for me.

A.—The answers to your questions will depend somewhat upon how much of your operating-room you wish to light, but we would suggest a sky-light about 20 x 13 feet, and a side light 20 x 7 feet high. The angle of your sky-light would depend somewhat upon the kind of northern exposure you have, say between 30 and 45 degrees from the perpendicular. Personally, we would prefer corrugated glass for this purpose, and make the panes as large as possible without running the cost up beyond your limit. As you say, opinions differ largely in these matters, and each photographer has certain ideas which best suit his particular method of working.

Q.—J. A. B. writes: Can you inform me by mail how double exposures, or rather double images of the same person, on the same plate, in different positions, are made, without any dividing line showing between them.

A.—We find it impossible to answer such letters by mail, note the heading of this column. All that is needed is some sort of opaque half screen, so arranged that two successive exposures can be made on the same plate, first on one half, then on the other. A convenient way is to have a box with flaring sides (so as not to cut off any of the view), provided with two flap doors, meeting accurately in the middle. This box is fastened over the lens in such a manner as to have the joint of the doors exactly opposite the center

of the lens and some 3 inches in front of it. Paint the inside of the box a dull black. When making the exposure the subject must be at least six inches away from the median line of the picture, otherwise there will be a blurr. Having posed your subject on the right hand side of the median line, open the right hand flap and shut the left one, draw the slide carefully, uncap the lens and cap. Pose subject on other side and repeat operations, using the other flap. With accurately fitting joints to the doors there will be no dividing line.

Q.—F. W. T. writes: I recently have had trouble with my albumen paper. When I come to mount, the paper seems to have lost its gloss, and although it regains it more or less in drying, yet the prints lack brilliancy, and frequently while moist a slight rub will remove a large part of the picture from the paper. What is the cause? I use N. P. A. paper and a 50 grain bath, float one and one-half minutes. Occasionally the albumen seems to soften and melt off in toning.

A.—You are probably using a toning bath that is too alkaline. Excess of alkali in the bath destroys the luster by dissolving off some of the albumen and at times will soften the whole coating to the extent you mention.

Q.—M. H. S. writes: Would you kindly inform me through the columns of your BULLETIN what, or of what nature or composition, is the lubricator used upon the picture in the February 13, Vol. 23, of Anthony's Photographic BULLETIN. I have for some time been using and trying different lubricators, and they have all proven unsatisfactory, but the one of which I speak fills the bill so completely, that I would be grateful to know its composition.

A.—The picture to which you refer was made on a collodion paper, which takes, under a hot burnisher, the polish you so admire, without the use of any lubricator whatsoever. A moderate use of castile soap just before burnishing will certainly not injure, even if it does not benefit, the high polish obtainable without it.

Personally, we prefer a good *hot* burnisher and castile soap to any lubricator we have ever used with albumen paper.

Views Caught with the Drop Shutter.

ALMOST the entire contents of the studio, the operating-room, and rear portion of the building owned by MR. FRED ARMSTRONG, a

South Third Street, Hamilton, Ohio, were destroyed by fire on the 3d inst. Mr. Armstrong had succeeded W. W. Appleby in the proprietorship of the place since the 8th of last September. The total insurance carried by him was only \$600, and his loss will considerably exceed this sum. The fire is believed to have been of incendiary origin and had a long start before the fire department succeeded in arriving upon the scene.

WE would call attention to the advertisement appearing in the publisher's pages relating to the sale of an equatorial telescope. The instrument in question is a very fine one, and at the price asked is an unquestionable bargain.

A FIRE in Saunemin, Livingston Co., Illinois, on January 29th, completely destroyed MIER's photographic studio. When first discovered the fire was coming out of the roof and the entire inside was in a blaze, so that nothing could be saved. The loss will amount to \$600, and the owner carried no insurance. It is probable, however, that MR. MIER will shortly rebuild, as his business was a successful and remunerative one.

WE have just received from MR. EDWIN C. PRATT, the well known photographer of Aurora, Ill., an example of his skill in the shape of a picture of his new studio. The entire building is occupied by him, and was built especially for his purpose.

The reception, waiting and two dressing rooms take up the front portion of the building; next a large operating-room 22 x 45 feet,

with ample sky and side lights. The printing and print changing rooms occupy the second story back of the skylight, while the basement is devoted to storerooms and workshop.

Heretofore, MR. PRATT has been unfortunate in his selection of sites, having been burnt out twice within sixty days, and we wish him for the future the good fortune which certainly should follow the display of such perseverance and energy as has been shown by him.

WE had the pleasure a short time ago of receiving a call from MESSRS. HORGAN and ROBEY of the firm of HORGAN, ROBEY & Co., photographic merchants of Boston, Mass. They were on their way home from Chicago, and expressed themselves as much satisfied with the success of their trip.

MR. A. McCANN, of Williamsburg, Ohio, accepted what he thought was a good chance to make money easily, and rented his photographic studio to a young man named Charles Foster. The rental included the studio and its complete outfit. Shortly afterward Mr. McCann visited his studio to collect some rent, which was due, and found it closed. Upon forcing an entrance and taking an inventory of the contents, he found missing a camera and lens valued at \$125, and a revolver worth \$10. Inquiry at Foster's boarding place revealed the fact that he had been missing several days, and it subsequently transpired that several other citizens of Williamsburg had also been victimized. Up to the present no trace of the missing has been found.

TABLE OF CONTENTS.

| | PAGE | | PAGE |
|--|------|--|------|
| BIBLIOGRAPHY..... | 125 | LOWELL CAMERA CLUB..... | 125 |
| COLLODION AS A SUBSTITUTE FOR ALBUMEN IN POSITIVE PRINTING.—PART I (continued), by <i>Walter E. Woodbury</i> | 109 | ON PLATINUM TONING AS APPLIED TO GALATINO-CHLORIDE PRINTING-OUT PAPER, by <i>James Brown</i> | 106 |
| COMPOSITE PHOTOGRAPHY: A NEW METHOD, by <i>W. Jerome Harrison</i> , <i>F. G. S.</i> | 116 | OUR ILLUSTRATION..... | 124 |
| DALLMEYER'S NEW LENS..... | 97 | OUR LETTER FROM FRANCE, by <i>Léon Vidal</i> | 103 |
| DYED LANTERN SLIDES, by <i>Andrew Pringle</i> | 114 | SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK..... | 125 |
| EDITORIAL NOTES..... | 100 | TABLES FOR PREPARING PERCENTAGE SOLUTIONS, by <i>C. C. Sherrard, Ph.C.</i> | 120 |
| FIFTH ANNUAL JOINT EXHIBITION PHOTOGRAPHIC SOCIETY OF PHILADELPHIA, SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK AND BOSTON CAMERA CLUB..... | 122 | THE OPTICS OF THE LANTERN, by <i>J. Traill Taylor</i> | 111 |
| HOT WATER AND AMERICAN ARISTO.... | 121 | VIEWS CAUGHT WITH THE DROP SHUTTER..... | 127 |
| | | WHAT OUR FRIENDS WOULD LIKE TO KNOW..... | 126 |

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ANTHONY'S Photographic Bulletin.

EDITORS :

PROF. CHARLES F. CHANDLER, PH.D., LL.D.

PROF. ARTHUR H. ELLIOTT, PH.D., F.C.S.

VOL. XXIII.

MARCH 12, 1892.

No. 5.

TEST PAPERS AND THEIR USES.

WE so often have questions asked us in the columns of the BULLETIN that would be needless if the questioner had a little better knowledge of the use of test papers, that we are inclined to believe a short article upon this topic will prove acceptable to our readers.

The various chemicals used by the photographer are either neutral, acid or alkaline to the test paper. But in order to determine to what degree this is so, that is, how acid or alkaline a certain chemical is, depends to a very large extent on the character of the test paper used. And we do not intend to imply that any quantitative determination of the presence of acid or alkali can be made by the use of test paper, but only a rough estimate of the amount of these materials present is in our minds sufficient for the use of the practical photographer.

The most common test paper to be found in the printing or developing room of the photographer is what is called "litmus paper." This is made from a blue vegetable coloring matter that requires some careful preparation to make it available and useful for the determination of the presence or absence of either acids or alkalies.

Commercial litmus, from which the litmus paper is made, is a very crude substance, and unless some process of purification is resorted to it will make but an indifferent paper with which to test for either acids or alkalies. The crude litmus is derived from certain lichens, which, under the influence of lime and ammonia, yield a blue coloring matter by a kind of decomposition that takes many days to become complete. The blue fluid thus obtained is mixed with chalk or plaster of paris and dried, and is thus sent into commerce as litmus. As a matter of fact, this crude material is a mixture of several coloring matters together with the lime salts, and often some potash salts, which are used to hasten the production of litmus from the lichens by decomposition in the first place.

The best process for the preparation of litmus paper is one that we have used for the past twenty years, and is managed as follows:

Size fine Swedish filter paper with a solution of gelatine made with 4 grains of isinglass in 1 ounce of hot water. Hang this paper up to dry and prepare the litmus solution according to the following method: Digest 1 ounce of commercial litmus with 5 ounces of water for three days, shaking frequently. Filter the fluid from the insoluble matter and make it slightly acid with pure nitric acid and then boil. Now very carefully neutralize the red fluid with pure potassium carbonate until a neutral purple tint is obtained. With this fluid paint one side of the sized filter paper first prepared and hang it up to dry. This paper is of a neutral tint and is extremely delicate. It keeps its sensitiveness for many years and if once used will always be needed for nice work.

Should it be necessary to have blue paper it is only necessary to moisten the above neutral paper with water and hold it in the fumes of a strong solution of ammonia for a few seconds. If an acid or red paper is needed, hold the moistened neutral paper in the fumes of strong acetic acid. As a rule it will be found best to use the neutral paper alone, as it shows the presence of both alkalies and acids, becoming red with the latter and blue with the former.

Another useful test paper is made from turmeric root. It is not often used in photography, but may be found of great advantage in the toning bath to detect the presence of acid. It is of a bright yellow color not affected by dilute acids and turns brown with alkalies. To make this paper, digest one part of powdered turmeric with six parts of a mixture of equal volumes of water and alcohol, warming very gently. Filter the fluid from the insoluble matter and paint one side of pieces of filter paper sized as for the litmus paper as given above.

As to the question of alkalies and acids in photography, it must be remembered that the action on test paper does not always indicate the absence or presence of these in the free state. For example, corrosive sublimate solution when perfectly free from acid will turn litmus paper red, and the same is true of alum; we therefore call these acid salts not because they contain any acid, but because they give an acid reaction. Pure ferrous sulphate is also an acid salt. But borax, sodium phosphate, sodium sulphite and sodium citrate are alkaline; not that they contain any free alkali, but because they turn litmus blue, even when they are pure in solution. It is therefore important to know the reaction of the various salts that appear to be neutral or acid before condemning them as impure from their reaction.

EDITORIAL NOTES.

A METHOD of intensification for collodion negatives, standing high with the German photo-mechanical printers uses bromide of copper as follows: The plate is first thoroughly washed and cleared in a solution of

| | |
|------------------------|----------|
| Iodine, sublimed..... | 1 part. |
| Potassium iodide | 6 parts. |
| Water | 500 " |

after which it is flowed with a solution of bromide of copper, 5 parts, dissolved in 100 parts of water. The immediate effect is to form a dense white coating, which must then be blackened in a solution of silver nitrate, 1 part, in 15 parts of water. If this treatment does not give sufficient density it should be repeated.

Over-intensification may be reduced by immersion in a bath of potassium cyanide 1 part; water, 200 parts. In place of the bromide of copper, 100 grams of sulphate of copper may be dissolved in 1,200 c.c. of water, and 400 grams of potassium bromide added.

WE notice with pleasure a report of the election of Captain W. de W. Abney to the presidency of the Photographic Society of Great Britain, to fill the vacancy caused by the retirement of Mr. James Glaisher, to whom the unanimous thanks of the society were tendered for his able administration. We would congratulate the society on their selection and election of one so well qualified to carry on the work of his predecessor as is Captain Abney.

AMONG the many suggestions for means of photographing sky and landscape successfully in one exposure, comes an idea advanced by Mr. W. E. Debenham, of England, that a yellow screen of glass be used, tilted forward in front of the lens in such a way that the sky shall be photographed through a greater thickness of colored glass than the foreground, or to have the screen set straight up and down, but cut with a wedge shape, giving to one edge a greater thickness than the other.

IT is interesting to note that of all the bromine made in this country, more than two-thirds of it is used in the production of bromide of potassium and sodium, both of which are consumed slightly in medicine and very largely in photography. The balance is chiefly used in dye works. Ohio, western Pennsylvania, West Virginia and Michigan are the States from which it is most largely obtained.

A TREAT of unusual interest was enjoyed by those who were so fortunate as to have attended the lecture and exhibition of views presented before the New York State Forestry Commission at Albany by S. R. Stoddard, of Glens Falls, New York, whose work is so well known. Over two hundred and twenty-five views of Adirondack and Hudson River scenery were shown, and the occasion was one of great value and pleasure to all. The lecture was given by invitation of the Commission, with a view to demonstrating some of the many natural advantages possessed by the State parks.

THE Brooklyn Academy of Photography at its annual meeting elected the following officers for the coming year: President, Frank La Manna; Corresponding Secretary, Harry S. Fowler; Treasurer, Edward H. Quantin. It was decided to admit ladies to full membership.

THE very tasty menus used at the annual dinner of the Newark Camera Club on the 25th were from designs by Mr. Paul Thiery.

THE final appeal from the Committee having in charge the Maddox Testimonial Fund has been issued with a view to closing the subscription lists on the 31st inst., and in the hope of eliciting a hearty response prior to that time. It is not claimed for Dr. Maddox that he alone is to be credited with the great advances in gelatine processes in use in photography, but the general form of the

testimonial will be as follows: "This testimonial is presented to Dr. Richard Leach Maddox in recognition of his services to photography and especially of his investigations in connection with gelatine emulsion." Any and all contributions should be forwarded as soon as possible in order to be in season for acknowledgment.

WE would express our regret at being unavoidably absent from the recent exhibition of slides by the Photographic Society of Philadelphia, to which we were very kindly invited.

It is proposed to organize a camera club in Canton, Ohio, and the movement has a hearty support. A new society, called the Queens County Camera Club, was organized in Long Island City in February, with the following officers: President, Thomas Cusack; Vice-President, Professor F. Schonberg; Secretary, John Connery, and Treasurer, Newland Van Riper. Headquarters are to be obtained at once, and active work commenced. The field is ripe in Meriden, Conn., for a club, and measures are now on foot toward its establishment. Another club has just been formed in New Britain, Conn., with the following officers: President, E. M. Hulburt; Vice-President, Robert Brown; Secretary and Treasurer, George Atwell.

IN a recent work by L. Mathet, of Paris, on orthochromatic photography the following formula for sensitizing plates to red, yellow and orange rays appears:

| | |
|--|----------|
| Alcoholic solution of quinole, 1:500..... | 8 c.c. |
| Alcoholic solution of cyanine, purified by alcohol, 1:500..... | 1 c.c. |
| Ammonia, 880 | 2 c.c. |
| Water | 200 c.c. |

The ammonia to be last added and plates left in the solution for sixty to eighty seconds; they will retain their sensitiveness for about twenty days.

THE California Camera Club, already conspicuous by reason of its philanthropic efforts in the past, has just added to its laurels another successful entertainment for the benefit of the sufferers by the recent earthquake in Japan, on which occasion a fine collection of slides was shown and the evening enlivened by music.

AT a late meeting of the Electric Club of Chicago a very interesting and instructive paper was read by Mr. Chas. Kammeyer, of Eau Clair, Wis., on "Photography as applied to the Investigation of Electrical Phenomena," a number of slides were shown, and many interesting investigations explained and demonstrated. Several negatives of fuses in process of ignition had been obtained by the speaker, in each of which it was clearly possible to notice the different action of varying agents, some exploding, and others melting, in process of combustion.

THE proposed new rooms of the Lowell Camera Club are intended to be everything that a club can need, and good progress is being made toward their acquirement.

THE best exhibition ever given by the Hartford Camera Club was opened on the 25th of last month with a remarkably good collection of work by its mem-

bers. The diploma for the best general excellence of work was awarded R. A. Wadsworth. A total of two hundred and twenty-eight pictures were hung.

A VERY enjoyable slide exhibition was given by the Albany Camera Club on the 12th ult., which was attended by a large and appreciative audience. Nearly two hundred slides were shown, all but a few of which were by members of the club.

THE photographers of Nebraska have formed a State organization which has just held a convention in Omaha and in connection with it an exhibition of their work. The officers for the next year will be announced later.

WE had the pleasure of attending the second annual dinner of the Society of Amateur Photographers of New York, which was held at the "Arena" on the evening of February 27th. It was strictly a social affair, and while a goodly repast and a flow of soul were enjoyed by all present there was little talk that could be called technical. Among those present were Paul V. Thiery, the Vice-President of the Newark Camera Club; W. H. Drew, of the Lynn Camera Club; A. J. Thomas, of the Hoboken Camera Club; J. H. Stebbins, Jr., T. J. Burton, C. C. Roumage, Alfred Steiglitz, W. B. Post, together with a number of others; all of whom enjoyed a most delightful evening together.

WE are indebted to Professor A. L. Colton, of the United States Weather Bureau at Washington, for the opportunity of seeing the photographs of the tornado he mentions in his paper. There is no doubt that these pictures are the result of combination printing in one case and retouching in the other, which makes them valueless as records of meteorological phenomena. We hope our readers will carefully study Professor A. L. Colton's interesting paper in this issue of the BULLETIN and enlist in a work that is at once fascinating and of permanent value to science.

LETTER FROM GERMANY.

BY DR. H. W. VOGEL.

The Chicago International Exhibition.—The Instantaneous Hand Camera.—Morning and Evening Light and Color.—Sensitive Plates.—Rodinals.—Photography in the Court.—Plate Failures.

THE Chicago World's Exhibition approaches. I also have been requested officially to interest myself for the same, and a large number of programmes of the exhibition have been sent to me for that purpose. The programme has been criticised by many professionals and this might possibly extend through the United States. It gives very indefinite information with regard to photography and certain parts seem to be written by a party who is not very familiar with the matter, and places himself solely upon local grounds. The most remarkable is, that in the whole exhibition programme there is nothing said at all about photography *per se*. Only casually some branches of it and Photo-Mechanical Methods of Illustration, page 45, group 75, are mentioned.

The writer might have been guided by the Philadelphia programme, where photography was enumerated under Arts; or that of Paris, 1889, where photography was listed as Art of Reproduction.

Peculiar, but it is true, that the most popular branches of photography, landscapes and portraiture, are not mentioned with a syllable.

Further, disregarding all previous exhibitions from 1862 until the present time, Apparatus and Materials have been separated from Photography. They have been classified with telescopes and surveying instruments, where nobody will look for them. Photographic papers and chemicals, whose export to the United States amounts to many millions, have entirely been forgotten. It is also curious that Lithography, which for want of good stones is going backward, is admitted to a separate group (74), while Photography is not. To the latter has been granted only one branch, "Photo-Mechanical Methods of Illustration," and even not this exclusively, but in company with the methods of illustration not photographic (class 461). Processes are here mentioned which may be known in America, but certainly not in Europe, like the sieve process, the screen process, Ives' process—and of which the bulk of our photographers have not the least knowledge. Where are portraiture, landscapes, architectural, astronomical, microscopic, geological, botanical, zoological photography, instantaneous views, surveying and balloon photography, spectral views, views made with magnesium flash light and lichtdruck photography, etc.; things which are just as well represented in the United States as here?

Considering this, I deem it, therefore, necessary to have photography represented as a particular group, and to exhibit the same with all the materials it requires in a particular hall, as this has always been the case since 1862, particularly in Philadelphia. The photographers of that place put up a special exhibition building for photography. Will the Chicago photographers do the same?

Instantaneous apparatus comes more and more into general use. The photographer's camera is now a customary sight at the Christmas table and we know many who thus become photographers or at least amateurs, and even if the happy owner of such an instrument is not so infatuated with the art, he tries to convince his relatives of his deserving such a present. Unfortunately this winter was not very inviting to the youthful artists. The weather was beyond all criticism, and even with the best apparatus and full opening of the lens, they obtained in many cases not more than a silhouette. Miserable proofs were shown to us, and we admired only the originator whose pluck was equal to his bad results. "But it was in sunlight," said one, when we called his attention to the fact that a good result could not be calculated upon during the gloomy weather of the winter season. Questioned, "At what time?" we received the answer, "At four o'clock." At that time, shortly before sunset, the solar light has, of course, almost no power. On the brightest day of the present time it will have no stronger action at twelve o'clock noon than at six o'clock, p. m., during the month of June. Other defects, bad position, out of focus, etc., we will not mention at all, but we are surprised about the number of detective cameras which are met with, on the railroad for instance, under conditions of light when we certainly would have left ours at home. We saw not less than six such cameras on a single day. The public is already used to them, and only very seldom they escape attention. We noticed young ladies hold their hands before their faces because they did not feel like enriching the collection of an amateur with their portraits. The old-style camera is in most danger to be easily recognized.

Almost every week new instantaneous cameras are invented, and it is about

time now to deviate a little from the old patterns, so as not to excite the suspicions of the public. Even the older and more popular cameras should change their exterior somewhat. Particular attention should also be called to the fact in the circulars that even with the best instruments perfect pictures cannot be taken during the dark winter months.

It has oftentimes been asserted, and is generally believed by the public, that the morning and evening hours were better than noontime for the exposure of color sensitive plates, the atmosphere itself acting as a ray filter. But this fact can only be applied to sunlight, which is not always to be met with, and it has been known for some time that daylight after sunset diminishes in red rays. This fact is so striking that in twilight blue objects will appear almost white, red and orange colored objects black. The writer of this has oftentimes offered to friends in such light fresh oranges which had a brown appearance and were refused as being rotten. It has been asserted by a good many that the atmospheric light is most favorable to color sensitive plates toward morning or evening. But this does not agree with the fact that the quantity of blue light increases toward evening. This, of course, is applied only to the diffused light of the sky, and not to solar light. This admits principally a better passage of the red and yellow rays in the evening than the blue ones on account of their longer passage through the atmosphere. It is, therefore, a great mistake to believe that the red and yellow rays act better in the evening than at noon. Photographic experiments prove that they are weakened more in the evening than at noon by absorption of the atmosphere. In a landscape there is, therefore, during the evening hours, on the shadow side of the objects a strong preponderance of the blue rays from the atmospheric light. On the sunny side there are more red and yellow rays, but in a considerably weakened condition. These are not favorable conditions for views with color sensitive plates.

If the sun is now entirely hidden the conditions are still more unfavorable, and the idea that morning and evening hours are the most favorable for color sensitive views has to be abandoned. The assertion that the atmosphere would thus act as a ray filter might be admissible for the sun, but under no circumstances for the atmospheric light, and without the latter it is impossible to take a landscape.

The new developer, rodinal, has found its way to America, I suppose. Here the opinions about it are very much divided. During a discussion at a meeting of the Photographic Society here, Herr Seldis compared the action of rodinal with that of not too old eikonogen. For paper, rodinal can be highly recommended, particularly in its composition with carbonate of potassium; the developing can be prolonged for a long time, and still pure whites are retained. The writer has observed a strong retroaction of Sachs plates developed with rodinal.

Herr Simon is of the opinion that with rodinal more can be attained than with any other developer. He developed a plate with hydroquinone, and as the action of the developer ceased he continued development with rodinal and obtained yet many details.

Frau Dr. Seler has developed landscapes taken with Görz Applanat No. IV, smallest diaphragm, with rodinal. The development took place without addition of potassium bromide, was commenced with 40 times diluted developer and completed with 30 times diluted developer after the picture had appeared. The

negatives were as satisfactory as could be desired. The astronomer, Herr Arch-enhold, has applied rodinal in 500 to 600 times dilution for celestial views with advantage. Sensitometer observations have proven that in 10 times, as well as 30, 50, and even 500 times dilution, it will develop more details than hydroquinone.

The stronger the rodinal developer is applied, so much richer in contrasts the result will be. At a thirty times dilution it will work about ten times as quick as hydroquinone; if diluted 500 times the development will last just as long as with hydroquinone.

Professor Rietschel confirms the favorable action of rodinal, but regrets the apparently inferior durability of the same. In concentrated condition, particularly by additions of potassium bromide, it will keep longer; in diluted condition it shows on the next day a claret color. We regret further that the manufacturer of the rodinal places it on the market only as a ready made developer, without giving the formula or mentioning the composition. All attempts to improve the developer or to make a change in the same, as sometimes required when various kinds of plates are used, are thus rendered difficult, if not entirely frustrated.

Herr Gaedicke has not had such favorable results with rodinal, and will await some sensitometer tests before he can pass a final judgment against it.

Herr Rietschel acknowledges finally that he can recommend the rodinal only to experts.

The application of photography in our courts of justice, particularly for the discovery of counterfeit signatures, increases here daily, and we might mention Dr. Jeserich as an authority in this branch. In some late cases the writing was compared, and this was effected by putting specimens of the writing of different persons, copied on transparent films, upon the original letters, which had been the cause of suspicion, and in this way comparing sharply single letters as well as full words. In this way, by the undoubted equality of the handwriting, Dr. Jeserich succeeded in proving and tracing the authorship of one and the same person to different documents, so that in two cases, the robbery of the safe of the Elberfeld theater and a burglary in Friesack, the thieves were detected and found guilty. In a third case—the murder of a servant girl—it was proven that a letter, which was found in the suspected party's pockets and was intended by its contents to divert all suspicion from him, was written by himself. Interesting is also the proof of additional writing to a document. When part of the same is enlarged, the difference in the shade of the ink and the spreading of the same, where it crosses some of the old letters, can easily be recognized.

Thus the words of Wunder, expressed twenty-five years ago, have become a fact: "Photography makes the arms of the police grow longer and shortens the legs of criminals."

The number of photographic plate defects is legion. We are therefore not surprised, that in spite of all large and small text and hand books, so many inquiries are made about the same. People buy books, but they generally do not read them.

If they are told in response to a question, "That is found in your book," they will declare that they cannot find it; they never think of looking in the index. Without the latter it is, of course, always pretty difficult to find certain matter. Of the many plate defects which are censured, one deserves principally

to be mentioned whose cause can be guessed without looking at the defective plate. During my travels I had oftentimes opportunity to witness the formation of this defect. It is the so-called silver fog. In Switzerland there are a great number of hotels which announce publicly the possession of a photographic darkroom for their amateur guests. This is a fact; but we doubt if working in such a hotel darkroom is very agreeable, particularly in the presence of some neighbors who boast about everything, and drive away the other guests. For a sufficient separation of developing and fixing materials the proper care is also not always taken. The number of trays is insufficient, and in some cases none can be found at all. It is, perhaps, best to recommend to travelers to always carry their own trays along. It happens that developing and fixing is done in the same tray, and the result is the above mentioned defect, silver fog. If a drop of strong fixing soda gets into the developer the fog will undoubtedly originate; and undoubtedly this happens frequently in darkrooms where developing and fixing solutions are not sufficiently separated. Then there are the glossy finger spots. A plate is developed; it is put into the fixing bath, and the hand, still wet from the fixing solution, placed a second time in the developer. Under such circumstances the formation of glossy silver spots is not to be wondered at. "Wash your hands" is the first rule which should be observed by the operator. Separate trays, that can easily be recognized, must be used for the developing and fixing solutions.

BERLIN, February, 1892.

PHOTOGRAPHY AND METEOROLOGY.

BY PROFESSOR A. L. COLTON, *U. S. Weather Bureau, Washington, D. C.*

IN the *American Meteorological Journal* for October, 1891, I discussed at some length the authenticity of two alleged tornado photographs, and as they suggest some thoughts upon the meteorological applications of photography, I trust that a review of the principal features of these pictures will be suitable for the columns of the BULLETIN.

On the afternoon of July 13, 1890, a severe storm developed several miles north and west of St. Paul, Minn., and swept to the southeast. At Lake Gervais, directly north of St. Paul, it became a tornado, destroying eight houses and causing the death of five persons. At St. Paul there was a high wind with some rain and ominous cloud masses drifting rapidly to the east. Hundreds of people in the city witnessed the progress of the tornado north of them.

A professional photographer in St. Paul placed on sale a photograph purporting to represent the tornado funnel taken as it passed by, from a hill in the southern part of the city, distant six miles from Lake Gervais.

In an interview with the photographer, he stated that he was on his way home after taking some views, and observing the tornado forming to the north, hastily set up his camera, focused by extending the bellows to a point marked on the bed, and quickly exposed the plate by removing and replacing the cap. At first sight the picture looks as if it were taken on a dark day; there is slight blurring at the edges as though a large aperture had been used, but the detail is remarkable, considering the alleged method of focusing. A huge funnel is represented as descending from the clouds to the earth, and is found by its relation to intervening objects to be directly in line with Lake Gervais. If the picture is

a deception, this line must have been carefully studied. The time at which the photographer says the picture was taken agrees well with the best testimony as to the time of the destruction at the lake.

These are about all the points that can be advanced in support of the photographer's claim. That a "dark, pendant, funnel-shaped cloud" was seen from St. Paul, is well proven, but witnesses differ as to the appearance it presented, and precise information in regard to it is hard to obtain. But this picture shows a beautifully symmetrical funnel, with vertical axis and sides curving about equally; an *ideal* funnel, such as one would usually imagine. It is represented moreover as reaching the ground some distance *south* of the highest point of ground visible, which is a high, three-crowned ridge a mile or more south of the lake. The edge of this ridge is distinctly seen through the bottom of the funnel; a circumstance of itself sufficient to destroy all confidence in the picture.

The border line of the funnel and of the cloud from which it depends presents over a large part of its extent a mottled or stippled appearance, suggesting the idea that this may be the line of junction of two separate portions which have been united by combination printing. To see if this appearance was the result of retouching I asked the photographer to show me the negative, and was shown two or three duplicates, with the information that the original negative had been lost in some mysterious way, the proprietor inclining to the belief that somebody in the establishment had broken it. It was explained to me that orders for the prints came in so rapidly that to supply the demand a positive was made by contact, and several negatives from that.

The lights and shadows in the picture indicate that the strongest light came from the southeast, as if it had been taken on a moderately bright forenoon; but the tornado occurred late in the afternoon. Unless the rifts in the heavy clouds overhead could have so transmitted the light as to cause this appearance—which is highly improbable—this fact alone is sufficient to disprove the authenticity of the picture.

The other photograph is a representation of the same storm, and was taken from the balcony of a hotel in Minneapolis, and therefore much farther away. It was made by an amateur, who, at the time of my visit, had removed from the city and taken the negative with him. That it was photographed as claimed I have no doubt, as I conversed with two or three gentlemen who were present at the time, and was conducted to the balcony to compare the photograph with the scene presented. But it is not claimed that the negative was not "improved" by hand work, and, indeed, the prints bear the most absurdly plain evidence that it had been tampered with. The houses in the foreground are shown with fair distinctness and bear no traces of alteration. The negative after development probably showed nothing in the sky but the great, confused cloud masses rolling away to the east, and perhaps not those very clearly; but in the print there is hardly a portion of sky as large as a finger nail which does not show that the corresponding portion of the negative was greatly changed from the original. There are dark scratches, evidently made by a sharp point, and white patches and lines which were probably produced by the free application of a soft lead pencil to the negative. Many of these lines have a circular, scrawly appearance, suggestive of the fore-arm writing exercises of our youthful days, and these the artist (?) evidently thought would add variety and improve the rounded appearance of the clouds. Some of these scrawls were so carelessly made that they

extend below the clouds and appear in front of one of the buildings in the foreground. A thoroughly honest photograph of the storm clouds, which were visible at the time, would be of the greatest interest to meteorologists, but this picture is not of the slightest value. Its only value was to the man who reaped the harvest from the sale of prints.

One of the gentlemen who was present when the plate was exposed told me that the photographer was trying to take a flash of lightning, and succeeded in uncapping the lens at the moment when a flash appeared. If the print is to be believed, Jove was lavish of his bolts, for five appear in a cluster, but, alas! they are all of the conventional zigzag type, which we are accustomed to see in popular illustrations. A lightning flash always takes a sinuous course, as any careful observer may see, and as the many photographs that have been taken of lightning abundantly prove, and never turns a sharp or abrupt angle. Our photographer evidently thought he had overdone the matter, for in the print which is now before me two of the flashes are "spotted out" with india ink.

An inferior, very inaccurate cut of this photograph is published in *Harper's Weekly* for July 26, 1890.

Here, then, we have two photographs purporting to represent intensely interesting natural phenomena and doubtless sold to hundreds of credulous purchasers, and yet demonstrably unreliable and worthless.

The most ordinary principles of ethics would demand that in photography as in everything else one should not deceive the public with articles cunningly falsified for the purpose of gain. In portrait photography judicious retouching will correct the exaggerations with which freckles, etc., are represented, and the additional embellishment by which wrinkles are smoothed out, roundness added to features, old people represented as young, and plain people beautiful, are so well known that no one is deceived. But in the case of natural phenomena undergoing investigation by scientific men the situation is different. Photographs of these phenomena are eagerly sought, and are of great interest when entirely free from alterations. However, the slightest application of the retoucher's pencil, or of the spotting brush, impairs, if not ruins, their usefulness.

Slight defects in photographs, such as spots due to flaws in the sensitive film, pinholes, etc., and even scratches, are often unavoidable, and are, I confess, a source of irritation strongly impelling one to apply the brush. In ordinary cases of portrait and commercial photography "spotting out" is allowable for the sake of the agreeable effect upon the eye, and deception is not thought of. But where the photograph is to be used for scientific purposes such attempts at improvement are merely a step farther away from the absolute truthfulness demanded.

The plaster casts of famous works of sculpture will serve to illustrate this point. As first made they are defaced with unavoidable ridges, caused by the joints in the mold. Carefully removing these would improve the casts in the way of making them more acceptable to the public eye. But in art museums, where the casts are to be seriously studied, these ridges are retained, as their removal might, to a slight extent at least, make the general appearance and expression even less like the original than before.

The use of combination printing to introduce clouds into a scene in which they were not originally photographed, undoubtedly serves to amuse amateurs

and to develop artistic taste (especially if the same set of clouds is not introduced into every imaginable kind of landscape), but from a scientific point of view is very reprehensible. Good photographs of clouds are always of value to the meteorologist; but such a combination as I have mentioned is worse than useless. The directions for combination printing given in most amateurs' hand-books should be accompanied by strong cautions upon this point.

(To be continued.)

THE CHEMISTRY OF THE METALS OF THE GOLD CLASS AND THEIR SALTS, AND THEIR BEHAVIOR IN PHOTOGRAPHY.

BY P. C. DUCHOCHOIS.

GOLD is reddish yellow or red orange by reflexion. In thin leaves it transmits green light; reduced to powder it appears violet yellow. In nature it occurs alloyed with iron, copper, silver, palladium and rhodium, sometimes in spangles or plates, rarely in crystallized mass. Its specific gravity is 19.50. It melts at 1,045 degrees C.; is the least alterable and the most ductile of the metals. It welds by simple pressure, and can be beaten into leaves of less than one-thousandth of a millimetre thick.

It is soft and not very tenacious. To increase its hardness it should be alloyed with copper and silver. The gold coin of the United States of America contains 9 parts of pure gold and 1 part of an alloy of copper and silver in equal parts. The English standard contains $\frac{1}{12}$ of copper; the French coin is $\frac{9.00}{100}$ fine; the alloy is copper.

Gold is not altered in dry or moist air whatever be the temperature. Hydrogen sulphide does not tarnish it. It resists the action of the strongest acids, with the exception, however, of selenic acid, which oxidizes it in being converted into selenious acid.

It is attacked by mixture of acids which evolve either chlorine, bromine or iodine, such as the mixture of nitric acid with hydrochloric, hydrobromic and hydriodic acids, and also the mixture of chromic acid with the above named hydracids.

The alkalis transform it into aurates, but only by the aid of heat and in contact with the air or oxygen.

The monosulphides do not attack gold; the persulphides convert it into sulphide.

Chlorine, bromine, iodine, fluorine, arsenic and phosphorus excepted, it does not unite with the metalloids. Chlorine attacks it in the cold; gold leaves dissolve easily in chlorine-water, forming auric chloride; bromine unites to it directly; iodine only by chemical means.

Pure gold is obtained by dissolving the copper alloy in aqua regia and precipitating by antimonious chloride. The precipitate is washed with hydrochloric acid, then with water, dried, and melted with saltpetre and borax.

It can also be precipitated as a powder by dissolving the alloy (copper or silver, or both) in aqua regia, evaporating almost to dryness, dissolving the residue in water, filtering, then adding a solution of ferrous sulphate strongly acidified with sulphuric acid; the precipitate should be digested in sulphuric acid and finally washed.

Gold is employed for the decoration of glass and porcelain, and as a pigment prepared by triturating with honey gold leaves or gold precipitated by antimonious chloride. For encaustics, gold in powder, obtained by precipitation with ferrous sulphate, is ground with $\frac{1}{12}$ of bismuth, a little borax and gum water.

Aurous chloride or gold monochloride AuCl.—It is a pale yellow salt obtained by heating auric chloride at 200° C. until chlorine ceases to be evolved. It is unstable; water converts it into auric chloride; light acts in the same manner. Heat reduces it entirely. The alkalis transform it into aurous oxide.

Auric chloride or gold trichloride AuCl₃.—A solution of gold in aqua regia yields by evaporation crystals of auric chloride retaining one molecule of hydrochloric acid, AuCl₃, HCl, and when carefully evaporated to dryness on a water bath leaves a residue of pure auric chloride containing 64.87 parts of gold per 100.*

Dry auric chloride is red brown, deliquescent, soluble in water, alcohol and ether. Its reaction is acid. In presence of organic matters it is reduced in the light, and in the dark first to the aurous compound, then to metal in an exceedingly fine state of division and the matter is disorganized. Heat reduces it in a similar manner.

It dissolves silver chloride. Potassa, soda and the alkaline carbonates convert it into aurate. Ammonia precipitates it from its solutions as fulminating gold which explodes even spontaneously. Silver nitrate forms silver chloride and auric oxide.

It is reduced by hydrogen, sulphurous and phosphorous acids, the sulphites, phosphites, ferrous sulphate, the mercurous salts, oxalic acid, the oxalates and many metals.

Acetic, citric and tartaric acids do not reduce it.

Auric chloride forms stable double salts with the alkaline chlorides. The sodium auro-chloride, NaAuCl₄, is prepared by dissolving 7 parts of sodium chloride in a solution of auric chloride obtained from 24 parts of pure gold, and evaporating to dryness on a water bath.

In photography auric chloride is specially employed to change the red brick color of the positive image obtained by the printing-out process in the fixing solution of sodium thiosulphate (hyposulphite) into a more pleasing one, which varies from rich brown to black. For this purpose the auric chloride solution is mixed with an alkaline bicarbonate, or the biborate (borax), tungstate or acetate of sodium, or with calcium hypochlorite (bleaching powder), or simply neutralized with calcium carbonate (chalk), etc.

As to the theory of the "toning" process, it consists, according to Professor R. Meldola, in the deposition of metallic gold in a state of infinitesimal division on the reduction products of the organic silver compounds, the toning solution being "looked upon as containing a potential deposit of metallic gold ready to be precipitated on any reducing surface that may be bathed by it, just in the

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| * One pennyweight of pure gold gives..... | 37 grains AuCl ₃ . |
| A \$5 gold coin of the U. S. contains 116 grains Au and gives..... | 179 " " |
| Half a sovereign " 56 " " " " | 86 " " |
| A 20-franc coin (French) " 96 " " " " | 148 " " |

The cupric chloride in the AuCl₃ solutions obtained from gold coins is not objectionable in photography and in the arts. If necessary it can be easily eliminated, without resorting to the tedious process of precipitation, by strongly heating on a sand bath the dry auric chloride until the gold is reduced to metal, then dissolving the copper with nitric acid, and after washing redissolving the pure gold, etc.

same way that the acid developing solution may be regarded as containing a potential deposit of metallic silver."[†]

Although recognizing the great authority of such a learned chemist as Professor Meldola, we cannot accept this hypothesis. There is a great difference between an acid developer, which consists of a reducing agent, ferrous sulphate or pyrogallol with silver nitrate, which, later, while in the nascent state, deposits on the photo film, impressed by light[‡], and a stable gold toning solution, such, for instance, as that devised by Legray, which contains free hydrochloric acid, or one of aurous thiosulphate (sel d'or). And as the intensity of the image is gradually lowered during the action, so that the half tones and the details in the shadows may be much impaired when the layer of the silver reduction is thin, it is evident that the process must be one of substitution, the gold taking the place of the silver. Silver chloride is found in a proof toned after fixing.

Oxides of Gold.—Gold forms two oxides: *The aurous oxide*, Au_2O , which is insoluble, inalterable in the light, and not acted on by the oxacids. Hydrochloric acid converts it into auric chloride and metallic gold. Hydrobromic and hydriodic acids transform it into bromide and iodide.

Auric oxide, Au_2O_3 , is insoluble in water. Light and heat reduce it easily. Nitric acid dissolves it; the solution is decomposed by water. The hydracids of the chlorine group convert it into the corresponding haloids.

Potassa and soda dissolve it, forming aurates. Ammonia converts it into fulminating gold.

It is prepared by decomposing auric chloride by magnesia and treating the precipitate with dilute nitric acid, which dissolves magnesia, leaving auric acid behind.

It is employed in photo-ceramics.

Purple of Cassius.—This compound is considered as a combination of the oxides of tin and gold. It is prepared by mixing a solution of stannous and stannic chlorides with four parts of auric chloride in eight parts of water.

A very fine compound is also obtained by suspending several thin plates of tin in a solution of auric chloride, 1:1,000. When the liquid turns brown, a few drops of a saturated solution of common salt should be added.

The purple of cassius is employed in photo-ceramics and to stain glass rose purple or ruby of various intensities. The glass transmits, however, the blue rays to an objectionable extent for the illumination of the photographic dark-room.

Sodio-aurous thiosulphate (sel d'or), $\text{AuNa}_3(\text{S}_2\text{O}_3)_2 \cdot 2\text{H}_2\text{O}$. This salt was discovered by Fordos and Gélis. It is stable, and crystallizes in colorless needles, very soluble in water and sparingly in alcohol.

Heat reduces it to metal and sodium sulphate. Nitric acid decomposes it, dissociating the gold. Hydrochloric and sulphuric acid added to its solution produce an evolution of sulphur dioxide; no sulphur is precipitated. Zinc, iron, copper, etc., reduce it to metal.

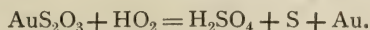
It is prepared by adding gradually 1 part of auric chloride free from hydrochloric acid to 3 parts of pure sodium thiosulphate (hyposulphite), both

[†] "The Chemistry of Photography," by Raphael Meldola, p. 354. London, Macmillan & Co.; and New York, by E. & H. T. Anthony & Co.

[‡] See "The Photographic Image," a theoretical and practical treatise on the development in the gelatine, collodion, ferrotype and silver bromide processes.

dissolved in a small quantity of water, and then adding alcohol, which precipitates the double salt. If in preparing it auric chloride is added in excess, it decomposes the thiosulphate with formation of sulphuric acid, it being precipitated in the metallic state.

The aurous thiosulphate cannot exist in the free state. It is rapidly decomposed; thus:



Reactions of the Salts of Gold.—Hydrosulphuric acid produces a brown precipitate soluble in ammonium sulphide. Ferrous sulphate in the cold, and oxalic acid at ebullition, precipitate metallic gold. A bar of zinc produces a brown precipitate of metallic gold. In dilute solutions the liquid becomes purple near the zinc by adding a little iron chloride, arsenic acid and a few drops of hydrochloric acid.

Gilding.—Silver, copper, brass are easily gilt by a solution of gold sulphocyanate, prepared by adding to a solution of auric chloride another of potassium sulphocyanate until the precipitate formed is entirely dissolved. The solution must not be concentrated and should have an acid reaction, a little hydrochloric acid being added if necessary.

For gilding, the object, quite clean, free from greasy matters or oxide, is immersed in the solution heated to nearly the boiling temperature.

A very adherent coating of gold is best obtained on iron or steel by immersion in a cold solution of auro-sodium thiosulphate. The solution is prepared by adding little by little one part of gold terchloride, dissolved in 240 parts of water and neutralized by chalk, to a solution of four parts of sodium thiosulphate (hyposulphite) in 720 parts of water.

Brass and copper, britannia silver, etc., can also be gilt by this process.

(To be continued.)

ON ENLARGING FROM SMALL NEGATIVES.

BY MR. W. I. CHADWICK.*

WE, the members of the Stereoscopic Club, believe that to appreciate natural size and distance, no photograph can compare with a stereoscopic slide, for we know it matters not whether the subject be a portrait or a group, a foreground study, or landscape embracing mountains as big as Mont Blanc, with miles of distance in the view, the stereoscope, when provided with suitable lenses, will assist us to a sensation which no other photograph can convey. But, notwithstanding all this, we may desire a change even from the very best; we may wish to have a few large single pictures, perhaps, to frame and hang on walls, or it may be that we desire a few large photographs from no better reason than that which I can give for wishing to smoke. And how to produce these larger pictures is the subject of the present communication. There are, of course, two ways by which large pictures may be obtained—one is to take them large to begin with; but there are few amateurs of to-day who would care to tug about a larger apparatus than whole plate, and even that is too heavy when on pleasure bent. The alternative method is to enlarge from smaller negatives. It may be thought by some (as, indeed, I know that it is) that direct pictures are superior to enlargements, and we have seen fairly large pictures exhibited on which was announced, "Taken direct—not an enlargement," just as though they were better for being taken direct. If sharpness and perfection of definition be desired, an enlargement from a small negative has many advantages, for it is a fact well known to those who have

* Before the Stereoscopic Club.

studied photographic optics that the shorter the focus of a lens, the greater the proportionate depth of focus it possesses. What we mean by depth of focus is the power to render near and distant objects equally sharp and true defined on one plane.

It has been demonstrated at this club that if we take a quarter plate picture with a 5-inch-focus lens, and a whole plate picture with a 10-inch lens (both from the same point of view), the two pictures will be in the same proportion and perspective; but if we use the relative size stop in each case, let us say $f-15$, the 5-inch lens will define all objects at 14 feet from the lens, and everything beyond that distance will be in focus; but, with the 10-inch lens, the same sharpness or definition will not be possible at less than 56 feet from the lens; thus the detail of all objects lying between the 14 feet and 56 feet (that is to say, the whole of the foreground) will be more or less out of focus and fuzzy; if, on the other hand, we make the foreground sharp, the distance. Now, from this it will be seen the great advantage in using short focus lenses when sharpness of detail is required. The term "short focus" must not be mistaken for "wide angle." A 5-inch-focus lens is a short focus when compared with a 10-inch; but a 5-inch lens, used for a whole plate, is also a "wide angle" lens, though the same 5-inch lens, when used to cover only a quarter plate, is no more a wide angle than a 10-inch lens used for a whole plate, for they would embrace exactly the same angle of view.

To recapitulate. It is an established fact that there is a very considerable gain in the amplification of small negatives over those taken originally large. Of course, when making comparisons, it must be understood that the conditions are the same in each case. If we apply a very much smaller stop when using the larger plate, the conditions are not the same—the exposure would be very much longer, and this is the reason why large pictures are usually exposed longer; but, if we can afford to use a small stop with the longer focus lens, we could also afford it just the same when using the short focus, which would bring the conditions as before. A good sharp negative, taken on a quarter or half plate, will bear amplification to three or four diameters, and I have frequently enlarged some of my stereoscopic negatives to five diameters. Thus, a quarter plate may be enlarged very successfully to 16 x 12, and a half plate to 24 x 18. But, before we begin to discuss the various methods and processes, the small negative first claims our attention. The image should have been well focused, and taken with a good lens, of course. For my own part, I always work with as large a stop as possible, but, when I have any idea of enlarging from the negative, a smaller stop is usually applied.

About the kind of plates that are best, I can say very little. All the plates in the market are good, if you only know how to use them, though, for certain subjects, some may be better than others. Many old workers maintain that collodion negatives are more suitable for amplification than those made on gelatino-bromide dry plate; and, in some cases, this contention may be true, for there is a great difference in the image formed by variations in developing gelatino-bromide plates. Slow development produces a much finer gradation, more suitable for our present purpose. The negative should be fully exposed, but not too dense; a rather thin negative is best, and in every way it should be as perfect as a negative can be made. It is very little use, for a beginner at any rate, to hope to successfully enlarge under-exposed negatives; the absence of detail cannot be improved by magnifying the defect, though it is possible in certain circumstances for an experienced worker to "tone down" certain defects by various "dodges," some of which will presently be explained.

The first process to be described is that practiced by the Autotype Company, London—the carbon process, which consists in printing in contact with the original negative a carbon transparency by what is known as carbon tissue. This carbon tissue is paper on which is spread a thick film of gelatine mixed with a very fine carbon pigment, such as lampblack, Indian ink, alizarine lake, etc., and, after drying, is made sensitive by immersion in a solution of bichromate of potash. Sensitive in this way,

that, although no apparent change takes place during printing, the action of daylight renders the film insoluble in hot water, while parts of the film protected from light are very insoluble in hot water. If a piece of sensitized tissue be exposed to daylight under a negative, the shadows—that is to say, the more transparent parts of the negative—allow more light to pass than other denser portions, such as the sky or high lights, and thus the film is rendered more or less insoluble, according to the light action. When sufficiently printed, which is gauged by experience and a little instrument called an actinometer, the tissue is made damp by cold water, and squeezed to glass plates, and after a little time the whole is immersed in hot water for development. Very soon the paper backing or support leaves the back of the film, the front still sticking to the glass plate. Now the soluble portions are washed away, the high lights, sky, etc., begin to show, leaving only the insoluble portions attached to the glass. Then, when dry, the image is seen to be in relief, the thicker portions, containing more carbon or coloring matter, being densest, and carbon transparencies made by this process are of exceedingly fine gradation. From this a large negative is made, generally in wet collodion, from which carbon prints are made in a similar manner to that already described for making carbon transparencies, only, of course, using a specially prepared paper on which to develop instead of glass.

The color of carbon prints can be almost anything from engraving or velvet black to red chalk, or it may be blue green, sepia brown, etc., depending upon the pigment used; and it is almost impossible to obtain any but the uniform color of the tissue selected, so that under or over-exposure, under or over-development, etc., makes no difference to color or tone, which cannot be said of any other photographic process. It seems a pity such a beautiful and simple printing process is not more used by amateurs. It is clean and inexpensive, and the most permanent process of any.

The next method is, in some respects, similar to that already described, but the process is different. It was sold as a secret process many years ago, and for which I had the infatuation to pay 5*l.*; but the secret was not long kept, and the details have been published on several occasions. A transparency is first made from the original negative by contact, but on a specially prepared albumen plate, and developed by acid pyro made hot, to which a small quantity of silver nitrate was added; indeed, it was in the preparation of this transparency that the principal secret existed. From this transparency a large negative is made, and from which any number of prints may be taken, either in carbon, platinum or silver. By the transparency method many modifications may be made. One was to make an enlarged transparency from the small negative on a gelatine plate, which could be touched up much easier than a negative; high lights could be put in by pencil or Indian ink, skies could be shaded, etc.; and then a large negative is made by contact either on another dry plate or on a sheet of albumenized paper, which, when waxed, to render more transparent, gives excellent prints. But it may be thought that to make either an enlarged transparency or negative requires a large camera, and so it does; but that need not be an expensive affair. At one time I was as much infatuated with enlarging as I am with the stereoscope at the present day. (I was much younger, and had not the experience, you see.) The camera which I used was constructed in one evening from an old tea chest. At one end was fitted a 12 x 10 dark slide and focusing screw, which I picked up second-hand; at the other end was a hole for the lens, which was a portrait lens, screwed on with the front combination nearest the box; the other end of the lens tube supported my quarter plate camera, with rack and pinion focusing arrangement, and in the place for the focusing screen was fitted a very simple carrier to hold the negative. The whole affair was carried to a window, and the small camera or negative end of the apparatus pointed to the sky. The tea chest camera was, of course, rigid, and of suitable length, so that the focusing had to be done by the rack and pinion of the small camera; and the amplification was always the same (in my case three diameters), so that all my enlarged negatives were uniform, and fitted printing frames and plate

boxes, etc. But, as a rule, amateurs do not want more than one enlargement from a negative, and the tendency at the present age is to get something with as little trouble as possible. Then the gelatino-bromide paper is the very thing, for we have simply to project the negative image, and develop it, and the thing is done.

I am not going to tell you the bromide enlargements are the best, but there can be no doubt about it they are far the easiest for an amateur to produce, and by suitable appliances and a little care and judgment, exquisite results may be obtained. The principle is this, original negative uniformly illuminated with a sheet of sensitive bromide paper—in the dark—at a suitable distance, and a diverging lens somewhere between. If daylight be used for the illumination of the negative, the room may be darkened to serve as the camera, but generally amateurs prefer to work by artificial light, when the whole operations may be conducted in the evening. There is a great advantage in artificial light, from the fact that it is more constant than the daylight with which we are blessed.

Now the uniform illumination of the negative is one of the most important conditions. If we were to fix a naked gaslight behind a negative, we should find one portion more illuminated than another. If we introduce between the negative and the light a piece of ground glass, the illumination would be much more even, though the whole very much reduced, and based upon this idea, many dodges have been suggested from time to time by various writers, who have asserted their modification a perfect success. Personally, I have tried and experimented with a large number of these "dodges," such as rows of gaslights, paraffine lamps and magnesium, with ground glass, opal, tissue paper, etc., between the light and the negative, and then came systems of reflectors, etc.; but in no single instance have any of these been satisfactory, and it may be taken as a fact that the only practical way to evenly illuminate a negative by artificial light, is by means of an optical condenser. The size of the condenser depends upon the size of the negative—when the whole of it is to be enlarged—and should equal a little more than the diagonal measurement of the negative; thus, for a quarter plate a 6-inch condenser is most suitable, though $5\frac{1}{2}$ inches might be made to do; for a half plate negative I prefer an $8\frac{1}{2}$ or 9 inch condenser. The source of light may be limelight or a paraffine lamp. For some negatives lamplight is the best, but generally an oil light will be found the most convenient. There are several forms of oil lamps used for enlarging purposes, and these, with the three wicks edgeways to the condenser, similar to a modern magic lantern lamp, are, in my hands, decidedly the best. It must be remembered that large condensers used for enlarging purposes are not perfect optical instruments, and do not collect the whole of the rays from one point, but require a greater volume to collect from than more perfect optical instruments, which would increase the cost probably to ten times their present price, and the volume of light necessary is not only in superficial area, but in depth, too. Thus, it will be seen that, however brilliant a flat flame may be, it would be not so good as two or three flat flames one behind the other. On the other hand, too large a flame, or source of illumination, is, for optical reasons, also objectionable, and the worst kind is such as a large Argand burner. We have heard a good deal about very powerful oil lamps, with five and more wicks; but, from repeated trials and careful observation, they have not been found to possess any advantage. As the illumination, powerful or weak, for a given negative affects the quality of the resulting enlargement, so the quality, dense or thin, stained or clear, for a given light affects the result in like manner. A thin negative requires a thin light, and a bold, vigorous negative requires a strong, powerful light, of course using a normal developer in each case. A thin negative, enlarged by a powerful light, like daylight, will produce a flat picture, while a vigorous negative, enlarged by a weak yellow light, such as that from a poor oil lamp, will give a hard result. But some modification can be made in the development, as will presently be explained.

(To be continued.)

[From Photography.]

COLLODION AS A SUBSTITUTE FOR ALBUMEN IN POSITIVE PRINTING.

BY WALTER E. WOODBURY.

PART II.

THE present part of this article is based upon the assumption that the student has carefully followed the instructions contained in the first part, and has succeeded in making the collodion emulsion and prepared the paper with it. We have now to consider the means of obtaining positive pictures upon it.

Paper prepared without the preliminary acid bath to give it additional permanency should be used as soon as convenient, as the brilliancy of the finished print is apt to lessen according to the age of the prepared paper.

In cutting the paper to the required size for the negative a paper knife should be used. It is not advisable with this paper to trim the prints before printing to the required size, as in the treatment with the various solutions the edges are liable to become frayed.

In printing the paper is placed under the negative in the usual manner and printed somewhat darker than a print upon ordinary albumenized paper would be. If the paper is pressed well against the negative we have all the finest and minutest details in the negative reproduced. Comparing it with a print on albumen paper it is astonishing to find how much of this is lost in the latter, for the reason that the sensitive salts are embedded in the paper, and do not, like the collodion paper, remain in the film, lying upon the surface of the paper.

It should be borne in mind that with a process of this kind more care and attention are required than with the ordinary processes, but the superiority of the results is full compensation. Thus, for instance, we cannot place a batch of prints in the toning bath and leave them unattended until they are ready to be taken out; but each print requires our attention.

They are first carefully washed, and then laid carefully in any of the following toning baths:

NO. 1.—SULPHOCYANIDE BATH.

| | |
|-----------------------------|-------------|
| Ammonium sulphocyanide..... | 2½ ounces. |
| Hyposulphite of soda..... | 90 grains. |
| Carbonate of soda..... | 30 “ |
| Water..... | 100 ounces. |

NO. 2.

| | |
|--------------------|----------------|
| Gold chloride..... | 30 grains. |
| Chalk..... | 1 teaspoonful. |
| Water..... | 50 ounces. |

Take for use equal quantities of each, and well mix together.

ACETATE OF SODA BATH.

| | |
|-----------------------------------|---------------|
| Chloride of gold..... | 1 grain. |
| Acetate of soda..... | 30 grains. |
| Chloride of lime (sat. sol.)..... | 2 to 3 drops. |
| Water..... | 8 ounces. |

PHOSPHATE TONING BATH.

| | |
|------------------------|------------|
| Phosphate of soda..... | ½ ounce. |
| Chloride of gold..... | 15 grains. |
| Water..... | 30 ounces. |

Collodion prints, when placed in solution, are very apt to roll up spontaneously. In the operations of washing, toning and fixing it is very necessary that they should be prevented from doing this, otherwise uneven tones will be the result.

Fix in a ten per cent. solution of hyposulphite of soda, or the prints may be toned and fixed in the same bath.

COMBINED TONING AND FIXING BATH.

| | |
|-----------------------|-----------|
| Hypo..... | 3 ounces. |
| Acetate of soda..... | 6 drams. |
| Alum (sat. sol.)..... | 3 ounces. |
| Water..... | 12 “ |

Fill the bottle containing the solution with scraps of sensitized paper, bad prints (unfixed), and allow it to stand in the open air for twenty-four hours. Then filter and add—

| | |
|---------------------------|------------|
| Chloride of gold..... | 7½ grains. |
| Chloride of ammonium..... | 15 “ |
| Water..... | 3 ounces. |

With this bath no previous washing of the prints is necessary, they are taken out of the printing frames and plunged directly into the solution; when the desired tone is obtained they are taken out and washed. Although this method commends itself for simplicity, yet I have always held that prints treated in this manner are liable to fade sooner than any others, and have proved it to be so.

But whether toned and fixed together or separately, we come now to the importance of the final washing, and the elimination of the hypo from the film. This can be sooner and more effectively done with the collodion paper, as we have only the film to deal with. About six hours' good washing in water, changed every half hour, will ensure the complete extraction of all foreign matter. The prints should not be left longer than this, as they are then apt to lose their brilliancy.

We have now to determine the manner of drying, as prints may be placed and dried upon plain glass, giving a highly polished surface, or they may be dried upon ground glass and removed with a matt or dull surface, or they may be dried spontaneously, mounted and burnished after the manner adopted with pictures upon albumenized paper. I will, however, describe each of these methods, and the operator may exercise his own choice in the matter as to which he adopts.

First, drying upon Plate or Crown Glass.—While the pictures are in the water take a sheet of good glass plate or crown, and having thoroughly cleaned it, rub it well over with a piece of flannel dipped in castor oil. Take the prints out one by one and lay them face downward upon the glass. Lay over the back a piece of American or india-rubber cloth, and with a squeegee remove the superfluous moisture, and press the prints well into contact with the glass, excluding all air from between the two. Place the sheets of glass upright in a warm place, and when the prints are thoroughly dry, they can easily be detached from the glass, and present a highly polished appearance.

Drying for Matt Surface.—To do this, the same method is adopted, using a piece of ground glass. Care must be taken that the prints are thoroughly dry before attempting to detach from the glass, otherwise they will tear. The prints often feel quite dry, but it must be remembered that the last part to dry is the film, being farthest from the air, and we cannot feel this. I have always found that if the glass be thoroughly cleaned before placing the prints upon it, the latter, when dry, will detach themselves and fall upon the table.

Drying for Burnishing.—The prints should be laid across a round pole or hung up by clips to dry.

Any of the ordinary mountants may be successfully used. The prints which have been placed upon the glass to give the polish should be more carefully treated with the mounting solution for the reason that if any of it is allowed to get upon the surface it cannot be easily removed without also removing the glaze: I prefer the gelatine and alcohol mountant; this can be purchased ready-made from most dealers in photographic

The choice of Mr. Jackson for President was unanimous, and was certainly a wise one. His fame is world wide, but he is nowhere more famous or more popular than at home.

We have already had two most successful lectures illustrated with the lantern ; the first by Mr. J. A. Chain, on "Rome," the second by G. W. Platt on "Composition in Photography."

The club is organized upon a broad plan, admitting both professional and amateur photographers. Ladies are also admitted to membership.

The club is composed of two classes of members—Active and Associate. Active members are required to pay \$10 entrance fee, for which they receive a certificate for one share of stock, which is negotiable, the club being organized as a stock company.

The Associate Members are admitted upon the payment of \$3.

The monthly dues are \$1 per month to all.

It is intended to exchange slides with other clubs from time to time, and the writer would be pleased to hear from other Secretaries on this point.

In view of the fact that we have, perhaps, the grandest scenery on earth, right at our door, it is expected that the Colorado Camera Club will be able to send out some most interesting slides.

H. S. BELLSMITH,
Corresponding Secretary.

A HAPPY OCCASION.

ONE of the pleasantest events of the season that we have been called upon to note took place at the Hotel Hungaria on Thursday evening, March 3d, the occasion being a testimonial dinner to Mr. H. E. Pierce, who severed his connection with the house of E. & H. T. Anthony & Co. after an uninterrupted service of twenty-one years, to enter into business on his own account in partnership with Mr. Louis Bradfisch, in the manufacture of aristotype paper. Mr. Pierce was the guest of twenty or more of his former associates in business, many of whom, like himself, had grown gray in the service of the same house. After the more substantial part of the dinner had been discussed, the evening was spent in reminiscence, good wishes, music and laughter, as it was understood at the outset that nothing of a lugubrious nature was to be allowed. The sentiments of every one present were full of the kindest regard and appreciation for one who, while occupying a position at the head of a department, was yet always genial, kindly and just in his dealings with those brought in contact with him, and ever ready to shoulder the responsibility of mistakes occurring in his own department. He took with him sincere regrets at his departure, but the heartiest good wishes for a successful future.

OUR ILLUSTRATION.

THE beautiful illustration forming the frontispiece of this issue of the BULLETIN is one of a handsome series of views made by Mr. W. H. Jackson, the President of the Colorado Camera Club, and also President of the W. H. Jackson Photographic Company of Denver, Colorado. It is needless for us to call attention to the beauty of the work, as Mr. Jackson is without a rival in this class of photography. His renown in Rocky Mountain and Colorado scenery is world-wide. We are greatly indebted to him for kindly allowing us to give our readers

an opportunity to see some of the smaller examples of his work. His large pictures are works of art that adorn the homes of many of our Western friends as well as our own, and we only wish every one could enjoy them. The series prepared by the BULLETIN include "San Juan Capistrano," "Najaqui Falls," and the giant red-wood tree named "General Grant," of the California series of views; together with Twin Falls, Shoshone; Rosemma Falls, Pike's Peak; and "The Dutch Wedding" (Grotesque Rocks), Monument Park, of the Colorado series of views.

OBITUARY.

PROF. JAMES R. MUTH.

PROFESSOR JAMES R. MUTH, a former well known resident of Syracuse, died at his home in Clyde, Wayne County, in February, after a long illness. Mr. Muth was a native of Germany and came to this country when a young man. As a musician he took high rank. At one time he was instructor in the Female College at Hamilton. During his residence in Syracuse he made many friends. In addition to his musical studies, Prof. Muth was a photographic artist of rare merit, attached to his home being one of the finest studios in central New York.

In 1865 Prof. Muth was united in marriage to Marion A. Carver, at Fulton, New York, who survives. The deceased was a brother-in-law of Charles S. Carver, of Syracuse.

Prof. Muth was one of the most successful carbon workers in the United States. For five years he made all cabinet work in carbon, from 1878 to 1884.

We tender his sorrowing relatives and friends our sincere sympathy.

MORE WONDERS OF ELECTRICITY.

ASTONISHING experiments have been shown, in the beginning of February of this year, at the Royal Institution, by Mr. Nikola Tesla, a young electrician from America. Mr. Tesla first became famous as the inventor of the first alternate-current electric motor. He has proceeded with his studies in high frequency currents—that is, in the rapid change of direction—and now he exhibits a specially devised alternating-current dynamo carrying nearly 400 electro-magnets, driven at some 2,000 revolutions per minute, and supplying a current alternating 20,000 times or more per second. With this he realizes the idea of many electricians, of producing electric light in a vacuum tube without the intervention of any filament. By joining to the poles of his generator two sheets of tinfoil, one one over his head and the other on the table, the space between immediately became electrified, and a long vacuum tube waved about in it, without any attachment to any conductor whatever, glowed in the darkness like a flaming sword. This experiment was intended to illustrate the possibility of rendering an entire room so electric by plates in the ceiling or under the floor that vacuum bulbs placed anywhere within it would yield a light. Still more wonderful is the fact that currents of these extremely high potentials appear to be absolutely without effect upon the human organism. Taking an iron bar in one hand and a vacuum tube in the other, the lecturer made his body a portion of the circuit by placing the point of a bar upon a terminal, emitting sparks several inches long. The vacuum tube glowed brilliantly, while the lecturer remained wholly unaffected. If the force had been one five-hundredth of what it was it would probably have killed him instantly.—*Chem. and Drugg.*

He would add, in conclusion, that he agreed with Dr. Wallace in regard to the injurious effect of extensive washing. It tended to destroy the character of the image and also probably affected the permanency of the photograph.

Mr. Carbutt stated that during the Centennial he had quite a number of Irish views, the majority of which he mounted on thin glass plates with gelatine. It struck him that possibly the gelatine might absorb moisture, so he varnished the plates with collodion. When he last saw them they were unchanged. He had pictures purchased in Paris in 1862, which when last seen bore no traces of fading. Some of his own make, made in Chicago in 1862 or 1863, were just as fresh now as the day they were made—made, too, in the ordinary routine of gallery work, using carefully the best materials to be had.

Dr. Wallace asked whether the gelatine contained any glycerine. In the experiment he referred to the gelatine contained a proportion of glycerine.

Mr. Carbutt said he used no glycerine—only a plain solution of Nelson's gelatine.

Mr. Coates believed the trouble lay in the paper. The manufacture of paper within the last few years had changed very much, and it was hard to tell what they put in papers nowadays—anything up to old boots.

Some of the members referred to Dr. Wallace's remarks in regard to albumenized paper free from smell, stating that they had never come across a paper that did not smell.

Dr. Wallace said he could recollect the time when they could obtain from several dealers albumen paper free from smell—had no odor at all. He was in a position to know that prints made on paper free from smell would last fully as well as those made on the foul stuff made nowadays. He had been taken into a factory here where the albumenized trays smelt as sweet as though there had only been hot water in the pans. He knew that paper could be made not to smell. It would not decompose after being put on the paper, unless it were put in a damp place.

Mr. Cheyney said that about fifteen years ago he used to make a good many prints, and often had to make his paper himself; but even then, after being made a little while, it would begin to smell. He never in his life got any that did not smell.

Mr. Wood humorously remarked that if he came across any paper that did not smell he should think there was something the matter with his nose! (Laughter.)

Dr. Wallace stated that he would say a word on the other side. A batch of paper he had once, as pure and sweet as so much writing paper, turned out to be the worst he ever had in his life. It was unevenly albumenized, but it did not smell.

Dr. Mitchell had seen it stated that in order to properly albumenize paper it should have undergone a certain amount of fermentation, and consequently decomposed to a certain extent. However, he had no practical experience in the matter himself.

Mr. C. W. Miller called the attention of the members to Mr. A. L. Henderson's communication in the Bulletin of the French Society, wherein he stated that it was impossible to make a good emulsion with nitrate of silver and gelatine prepared together. During the process the nitrate of silver and gelatine should never be allowed to come together, otherwise green and red fog would inevitably ensue. This does not refer to boiled emulsion, but digestion in twenty-four hours.

Mr. Carbutt said he had had a little experience in making emulsions, and did not agree with Mr. Henderson's views. He had tried his method, and found it impossible to make a rapid emulsion with it. A good emulsion could be made with the nitrate of silver in contact with gelatine, and he had accomplished it in that way.

Mr. J. F. Sachse, as announced, exhibited specimens of work made with the new phototele-objective of Dr. Adolph Miethe, of Berlin, and read an explanatory paper in connection therewith.

Considerable discussion arose in regard to the combination used, Mr. Cheyney stating that he did not see how it differed from the regular Galilean telescope, and that there seemed to be a strange coincidence in the fact that Mr. Knipe, of Queen & Co., had been using this very identical thing for the purpose of having a variable focus for lantern objectives. It had also been used in the microscope as an amplifier. He did not see that there was anything new about it, except to apply it to photographic purposes.

Mr. Luders exhibited a model he had made of Dr. Miethe's combination, together with a print from a negative made with it, showing the tower of City Hall, taken from Washington Avenue, over a mile distant. The lens used for the positive was a 6-inch portrait lens, and the concave was only 2 inches—in fact, was from an ordinary opera glass. The result was very satisfactory, and a practical illustration on the ground glass, using a gas

jet and bracket as a focal point, was of great interest to all the members present, the camera exhibiting two pictures: one with the ordinary lens and the other with the new combination lenses. The difference was very apparent.

Dr. Mitchell next exhibited the new series of Kodak cameras, including the daylight Kodak (the use of which he explained), after which he made a few remarks in regard to the Ilford "Alpha" lantern slide plates, showing upon the screen the results of several experiments he had made with this plate, and pointing out the great variety of tone attainable over and beyond the ordinary lantern slide plate.

This new plate, he stated, was made by the Britannia Works Company, of London, one of the largest plate manufacturers in the world, and was peculiar in that it differed materially from any other plate in the market. It was a chloride of silver emulsion, but whether there was anything else in it or not he did not know. It was not at all opaque, and when handled in the darkroom it was almost impossible to tell the glass side from the film side. The plate could be developed with hydroquinone, which the makers recommended, or any ordinary developer. The plates he had were developed with hydroquinone and eikonogen. One thing about them was that they were remarkably slow. The experimental plates shown were exposed from thirty seconds upward, using an $f/8$ stop, 9-inch lens, and reducing from an 8 by 10 negative. As a contrast, he calculated that the same negative, with the ordinary bromide lantern slide, would require only about one-thirtieth or one-sixtieth of that time.

The peculiarity of these lantern slide plates was the infinite variety of tones obtainable with them.

Adjourned.

ROBERT S. REDFIELD,
Secretary.

AMERICAN INSTITUTE—PHOTOGRAPHIC SECTION. — ANNUAL DINNER.

THIS interesting reunion took place at Clark's on the evening of February 18th with an unusually large attendance.

Among those present were H. J. Newton, O. G. Mason, T. C. Roche, Charles Ehrmann, David Williams, A. H. Elliott, Robert Rutter, Col. V. M. Wilcox, Dr. K. W. Wilcox, C. Van

Brunt, C. C. Roumage, T. J. Burton, W. E. Partridge and many others.

President NEWTON presided. He proposed a toast to the health of the Photographic Section of the American Institute and invited all who liked cold water to drink it. He then addressed the members as follows:

I do not know exactly the programme of the evening, as the chairman of the committee is at the other end of the table and I cannot see him without an opera glass, and not being a mind reader, I do not know what he is thinking about or what he proposes to do.

The chairman requested him to make his own programme, and the President continued: As I understand it, we have been eating an adjourned dinner, adjourned from last September. I do not mean that the dinner was cooked last September by an adjourned dinner. The time when it should have been cooked, as I understand, was last September. But we have gotten outside of the dinner, we have not had any stimulants, so that the speeches, I suppose, will be dry, if we have any. Of course I did not come prepared to make a speech and I did not know anything about who was going to be called upon. I do not know it now. But I know that the Photographic Section exists and we have amateurs and professionals. The amateurs come and go. The professionals plod on, making their pictures as they were taught twenty-five years ago. The amateurs do the experimenting and publish the results. It is to this fact that photography owes its present position as an art science. I claim that it is indebted to the amateur for about all that has been discovered that was not discovered by Daguerre.

In the last year there has been very little advance, so far as I am able to learn, in the processes of photography. A great deal of attention has been paid to methods and modes of developing with new substances made from coal-tar and petroleum.

The orthochromatic plate has attracted a great deal of attention and a great future is claimed for it. There is one peculiarity in the claims for this plate that I would like to have Dr. Elliott tell us a little about. We were educated in the idea that there was no actinic ray in the orange and the yellow. Quite a number of years ago a man came from Bahia, S. A., with a paper, whose author was a man named Gutzlaf, which he said was the result of his experiments with these colors, orange and yellow, for the purpose of proving that Becquerel was right. That paper was brought to the Photographic

Section of the American Institute and a committee was appointed to determine whether Mr. Gutzlaf was correct. That committee consisted of Prof. Tillman, Mr. O. G. Mason, D. C. Chapman and myself. The experiments were made at my house, and the conclusion of that committee was this: that actinism was a property of light, resident in all the rays in the ratio of the wave length, and we demonstrated it to be a fact, that there was actinism in the red and the orange in the ratio of the wave length. The date of that report I can find by going back, as it was published in the journals. Now, if it be true that science is builded upon the theory of the actinism in the ratio of the wave length, in violet as the strongest and in the orange or the red as the weakest, how are we in reference to this plate where we reverse the order by certain processes and make the most sensitive plate in the red, and so on up? I have seen that stated as a result and all the figures given. Now, how is it, if the actinism is determined by the wave length going from the least refrangible rays to the greatest, that we can reverse that order by any process?

Now I am not going to make a speech. These things come into my mind, and I think as a chemist Dr. Elliott can give us light on that subject and I call upon him to talk on orthochromatic plates.

DR. ELLIOTT.—Mr. President and Gentlemen: I must ask your indulgence this evening, as I am suffering from a very bad cold, and I may be a little foggy in my speech as well as ideas. With regard to this question that your President has propounded to me: You know it is a great deal easier to ask questions than to answer them, and yet it is food for a great deal of thought, if we stop and think a moment that it is these light waves that produce the sense of color. It is simply a question of the size of the wave and the rapidity with which they follow one another that produces the different sensations from red to the violet of the spectrum. These vibrations have recently been very closely connected if not proved almost perfectly identical, with certain electro-magnetic vibrations, and it is not impossible to my mind that the electro-magnetic energy which is so nearly related to certain chemical energies may be strongest in the violet rays and gradually deteriorate in strength in chemical activity toward the red. If we stop and think of that fact and of some method by which we may retard the force, the speed, and also affect the size of these waves at the violet end, with the element of time also

coming into play, we see that we can give the red end of the spectrum a chance to affect the sensitive plate. I go back in my mind to the experiments of Captain Abney, which I think were made with collodion plates, and if I rightly remember, as early as the years 1865, 1866, or along there; he succeeded in making photographs of the red end of the spectrum. His results were published in the Proceedings of the Royal Society of England. It is therefore a question of changing the speed in these vibrations, and we do it in two different ways. We do it by interposing something that changes the speed of the light waves themselves, and we also do it by putting something in among the molecules of sensitive substances, I mean in with the bromide and iodide of silver. We put something in among these molecules that makes them more sensitive to the red vibrations. And yet we are thinking of something that is extremely attenuated and misty in our minds, for what do we know practically about these effects except from results we get? We are looking at the question without very much experimenting, for there are few doing this kind of work from a truly scientific standard. I hardly know that I could throw any particular light on the subject. I would only like to make one statement in regard to one of the remarks of Mr. Newton, that these color sensitive materials, or rather these sensitizers, were obtained from coal-tar and petroleum. They are obtained from coal-tar, it is true, but not from petroleum. That produces a different class of bodies, and I think up to the present time we owe no color directly to petroleum even in the color line, and I know of no substance derived from petroleum that has had the least influence in photography, either in orthochromatic work or other. I am rather sorry that Mr. Newton called upon me for this particular point, because I think there are others here who have paid a little more attention to its more recent phases than I have. I refer to my friend Prof. Ehrmann, who has been entertaining me quite pleasantly with some thoughts on this subject.

THE PRESIDENT.—We would all be pleased to hear from Prof. Ehrmann on this subject. It is to me a very interesting one, and now if Dr. Ehrmann will tell us what he knows or what he thinks, we would all be pleased to hear from him.

Prof. EH RMANN.—I had not the remotest idea of coming here to talk, but while Dr. Elliott was speaking I remembered a writer for the *British Journal* who said at one time,

light does not act in its entirety, only its individual rays act. From which we must infer that rays of different colors act with more or less energy upon the sensitive plate. Mr. Newton said that orthochromatic methods reverse as it were the action of colors. It is not so exactly, neither in my estimation is what Dr. Elliott says correct. He says the orthochromatic effect is due to molecular action. I assert, with Dr. Vogel, that the action is chemical. We have seen that proved by experiments. Color an emulsion with eosine or erythrosine and remove the colored bromide of silver and re-emulsify, when a more sensitive and active orthochromatic plate is had than by merely adding the dye stuff to the emulsion. One of our earliest experimenters engaged in New York, had an emulsion maker to make orthochromatic plates. Those plates did not work quick enough, and the man said to him, you do not put enough azaline in it. Now, he was wrong. Our friend put too much in it, for by adding more of the dye stuff, the excess of it acts as a ray filter and depresses very much the general sensitiveness of the emulsion. Our commercial orthochromatic plates are not at all color-sensitive in the proper sense of the word. They are only sensitive for two colors, for green and for yellow, and were they exposed upon the solar spectrum, it would be found that neither one of them reaches further than to spectrum line D, or the orange ray; but for commercial work, for the copying of an ordinary oil painting, for the copying of a wall paper or carpet, those plates do eminently well and their reputation is due mainly to their capability of reproducing yellow. Exceptionally we find such plates to approach the line C, but that is but rarely so.

Now we come to two colors which puzzle the ordinary photographer a great deal, the blue and violet. These colors act with orthochromatic plates just as vigorously as with ordinary bromide emulsion; and to suppress their action, or to lead to correct reproduction of colors in pigments, we interpose between objective and plate a ray filter or color screen of yellow color. The intensity of the screen determines the reproduced tone value of the most refrangible rays. Were, for example, a very dark screen used for the photographing of a landscape with distant mountain ranges of different color, their light blue would be rendered quite dark, and all atmospheric and perspective effect be destroyed.

It is the same in the copying of paintings or colored fabrics. Light blue predominant

needs but a screen of little intensity. Augerer, of Vienna, so well known for his orthochromatic reproductions, has probably forty or more screens of different shades and intensity, and selects from them to suit the object to be reproduced.

An intimate friend some time ago sent me an orthochromatic copy of a well known picture.

You could hardly distinguish the red from the green, and the blue, which in the original picture was a great deal darker than the red, was in his picture perfectly white and the red was dark.

A plate more sensitive for red and a proper screen interposed would have made quite a different reproduction.

There are but few good sensitizers for red, chlorophyl, chinoline blue, azaline and brilliant green.

Chlorophyl I have tried, but never get as good effects with it as I got with chinoline.

Now, chinoline blue is one of the ingredients of the much talked about compound dye, azaline, first brought forward by Dr. Vogel. Vogel mixed chinoline red, which is a substance I have never seen, and chinoline blue. The two together make this exceedingly fine sensitizer.

Having never had a chance to use chinoline red, I have substituted eosine blue shade, and had nearly the same effect as with azaline; still the chinoline red mixed with the chinoline blue produces the very highest sensitiveness in plates that I know of. Another thing in regard to orthochromatic plates is the developing of them. They tell you that you have to develop an orthochromatic plate nearly in total darkness. It is no such thing. I take my ordinary lamp, and develop at a distance from it.

But you cannot do that with cyanine; that requires total darkness nearly. Victor Schumann, who has probably experimented more with orthochromatic plates than anybody else, develops cyanine plates by hanging blue tissue paper over red lights, and he goes with his plate into the immediate neighborhood of the lamp and gets his plates perfectly clear.

The method of developing differs a little bit from ordinary methods. In the first place, an under-exposed orthochromatic plate is never a satisfactory picture. You can over-expose and retard and get what you want finally if you have to reduce the density, not by Farmer's solution, but by Belitzki's. That is the method that gives you the most beautiful effects in orthochromatic plates that have ever

been seen. Ferrous oxalate is in my estimation the best developer for orthochromatic plates.

Pyro-potash tends to fog the plates, and pyro soda is apt to make them too intense.

Eikonogen, most remarkable to say, has several times produced a reversal of the image.

Mr. RUTTER, of the American Institute, was next called upon. He said he had not the remotest idea of being called upon, that he had come to enjoy a good dinner with them all, and perhaps get some light on this art in which they were all interested. It was to him what the electric science of to-day was to so many of the common people. They knew there was a source of energy and certain results derived from that energy, and that was about the extent of their knowledge. So it was with regard to photography; he knew that by certain processes, certain ingredients and certain applications, certain results were brought about, but where the source or vital point of all this was he knew not, so he would confine himself to remarks on the subject of the American Institute. He said the organization dated back sixty years; that probably no institution had done so much to further the development of the useful sciences and to bring before the public the inventions of the past fifty years. The first experiment with the telephone was made between that building and the *Tribune* office, and in the aid and publicity given to those interested in inventions, he could safely say the American Institute has had its share and has done a work that is worthy of every man in this city and country. He said that on looking back over the progress of the last fifty years it would seem as though the solution of all the great inventions calculated to benefit mankind had been arrived at; but he believed that the next fifty years would develop as great, useful and phenomenal inventions as the past fifty years have. It was only a few years ago that we celebrated the hundredth anniversary of the Constitutional Government, and the progress made in that time was so phenomenal that we could hardly grasp the situation. He thought the advancement in speed and comfort of travel the most wonderful of all, but he thought it was possible to enjoy traveling quite as well by remaining at home and reading the thoughts and words of those who have been over the ground. He said he took a great interest in the Photographic Section, and he hoped the gentlemen present would not lose interest in its welfare or lose sight for one moment of the Institution which has done so

much for our fellow-citizens in this country in the past, and is now doing and will do in the future.

(To be Continued.)

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. Correspondents will please remember this. No attention will be paid to anonymous communications.

Q.—H. S. J. writes: Please tell me through your column, "What our Friends Would Like to Know," what is meant by "times" in the "Table for Enlargements and Reductions" at the end of "The International Annual?" Does it mean times or diameters? For example, a 4 x 5 enlarged four times would make an 8 x 10 picture, while if enlarged four (4) diameters it would make a 16 x 20 picture. Which is intended?

A.—"Times" in the table to which you refer means linear diameters.

Q.—G. A. H. writes: I have a Ballard actinometer with which I am very much pleased, so far as out-of-door work is concerned. For interior, however, I am unable to use it. I have been informed that a special actinometer is made for interiors. If that is so, will you please say in what consists the difference in construction? If there is no special one made for interior work, would you please tell me if it is possible to use the one I have, and how? I noticed a reply to a question about the Ballard actinometer in your issue of the 13th inst., and from my experience I should think the difficulty which "P. S. B." has is caused by looking through the instrument at a dark object.

A.—We know of no special actinometer made for use in taking interiors, and in this direction it must be borne in mind that the instrument has its limitation. Where the illumination is very slight, the effect produced on the luminous surface will be correspondingly small, and the time of disappearing hard to determine. It is possible that by doubling or trebling the ordinary length of time when exposing the instrument to the object to be photographed, a more energetic absorption and subsequent giving off of the light would result, and we think it worthy of a trial. In this case it would of course be necessary to divide the time taken for disappearing by the

spot by two or three, as the case might be, depending upon the length of exposure given to the actinometer.

Q.—A. S. writes: 1. Will a solution of carbonate of soda and sulphite of soda keep well together, any strength? (I mean mixed.) For instance, I use the Seed formula as given with their plate, adding the sodas, and when about to use add dry pyro, 3 grains to the ounce. I have noticed at times the solution smelled somewhat different. Please enlighten me. 2. Will negatives keep well after strengthening with bichloride of mercury and cleared up with sulphite of soda if well washed in running water? 3. Will gelatine "aristo" paper, gelatine made, make as durable prints if toned and fixed separately as the collodion aristo paper?

A.—1. Yes, provided that you keep the bottle well corked. 2. Negatives intensified in the manner you describe ought to keep perfectly for years. 3. Prints made on gelatine paper are not as durable as those made on a collodion paper, even though toned and fixed separately.

Q.—F. W. writes: Can you inform us of the cause of solar prints made by the serum process turning yellow? It not only occurs with our own work here, but we notice that solar printers throughout the country have the same trouble wherever the silver process is used.

A.—It is probably due to the fact that not enough acetic acid has been used in making up the silver and developing solutions. These should show a strong acid reaction and smell strongly of acetic acid.

Q.—J. M. C. writes: I received the Ballard actinometer all O. K. in due time. I do not quite understand the table for the plates I wish to use. I use M. A. Seed plates 26x and 23. I use a Wales Universal lens with the following stops: $f/10$, $f/14$, $f/40$, $f/80$. Will you please write me the proper time of exposure for the above plates and stops. I also find if the actinometer is exposed to strong light, and then put to the eye in a weak light, the spot can be seen a great deal plainer and longer than looking at a strong light. Must I look at the same light of exposure or weaker?

A.—In using a Seed 26x plate, you must consult the table on page 11 headed "Table for 60-Times Plate." Suppose the number of actinometer seconds were 60, your exposure with an $f/16$ stop would then be 3 seconds, with an $f/10$ stop it would be $\frac{5}{4}$ of 3 seconds or about $1\frac{1}{4}$ seconds; for an $f/14$ stop, $\frac{3}{4}$ of 3

seconds or $2\frac{1}{8}$ seconds; for an $f/40$ stop, $\frac{2}{4}$ of 3 seconds or $1\frac{3}{4}$ seconds, and for an $f/80$ stop, 25 times 3 seconds or 75 seconds. In short, multiply the results obtained from the tables by the fraction given above for the particular stop you intend to use. For a Seed 23 plate it is probable that the table for the 50-times plate will be suitable, remembering to make the necessary corrections for the stops. In counting the actinometer seconds you must point the instrument toward the object whose exposure you are determining.

Q.—W. H. R. writes: Please let me know the cause of the dead or dull spots on enclosed piece of silvered albumen paper. I use the following silver bath: 50 grains of silver to 1 ounce of water, keep my bath clear by use of sal-soda solution. I float paper $2\frac{1}{2}$ minutes, then place it between blotters. When dry, I put it in fuming-box and fume with ammonia from 20 to 35 minutes. When taking the paper from between the blotter it looks rough or grainy, as though it was silvered in spots, or the silver entirely absorbed from paper, and in printing leaves a dead or smoky spot. When first taken from the silver bath the paper looks as nice and clear as any one could wish to see it. Will too long a use of the blotter cause it?

A.—Your trouble may be due to any one of several causes, and it is hard to determine just which is the right one in your case. If, as you say, the paper is all right when it first comes from the bath, then the fault probably lies in your blotters; they should be kept clean and frequently renewed, and above all, you must remember that absolute cleanliness is essential to success in silvering paper. In floating be careful not to get any silver on the back of the sheets.

Q.—H. W. B. writes: Can rodinal be used for orthochromatic plates? Would such plates give as good results on aristo paper as more slowly developed plates would?

A.—Yes. Plates properly developed with rodinal will give results equally as good as if more slowly developed, and in many cases it is possible to get far more out of a plate by its use than through any other means, especially when it has been somewhat underexposed.

Views Caught with the Drop Shutter.

A BUSINESS change that will interest many people is the sale of the photographic studio of CHAUNCEY L. MOORE, of Springfield, Ill., to C. C. MORRILL, who will in future conduct it in the old Republican building.

Mr. MOORE is one of the veteran photographers of the State, and has been identified with the photographic business for over 40 years.

THE photographic studio of M. E. WATSON, of Bennington, Vermont, was totally destroyed by fire last week. Mr. WATSON was asleep in his rooms at the time and narrowly escaped with his life.

Among the valuable negatives destroyed was one of the only existing picture of the Catamount Tavern, an old historic building long since destroyed. The total loss was probably about \$2,000, which will fall heavily upon Mr. WATSON, as he carried no insurance whatever.

WE are informed that a medal is to be offered for the best finished and most artistic air brush drawing to be exhibited at C. D. FREDRICKS' photo rooms, 770 Broadway, New York, between March 5 and 10, 1892. Who will be the fortunate prize winner?

F. M. LACEY, photographer, Indianapolis, Ind., occupying rooms 66 to 74 in the Vance Building, had his studio damaged by fire and water to the extent of \$200 on February 23d last; fully covered by insurance. The fire originated from an overheated steam pipe in the attic just back of the elevator shaft, and had gained considerable headway before it was discovered.

WE learn with much pleasure that Mr. J. W. WILLIAMS, who, for the past four years,

has been traveling in the interests of J. H. McCollin & Co., of Philadelphia, has made a connection with the Eastman Company, of Rochester.

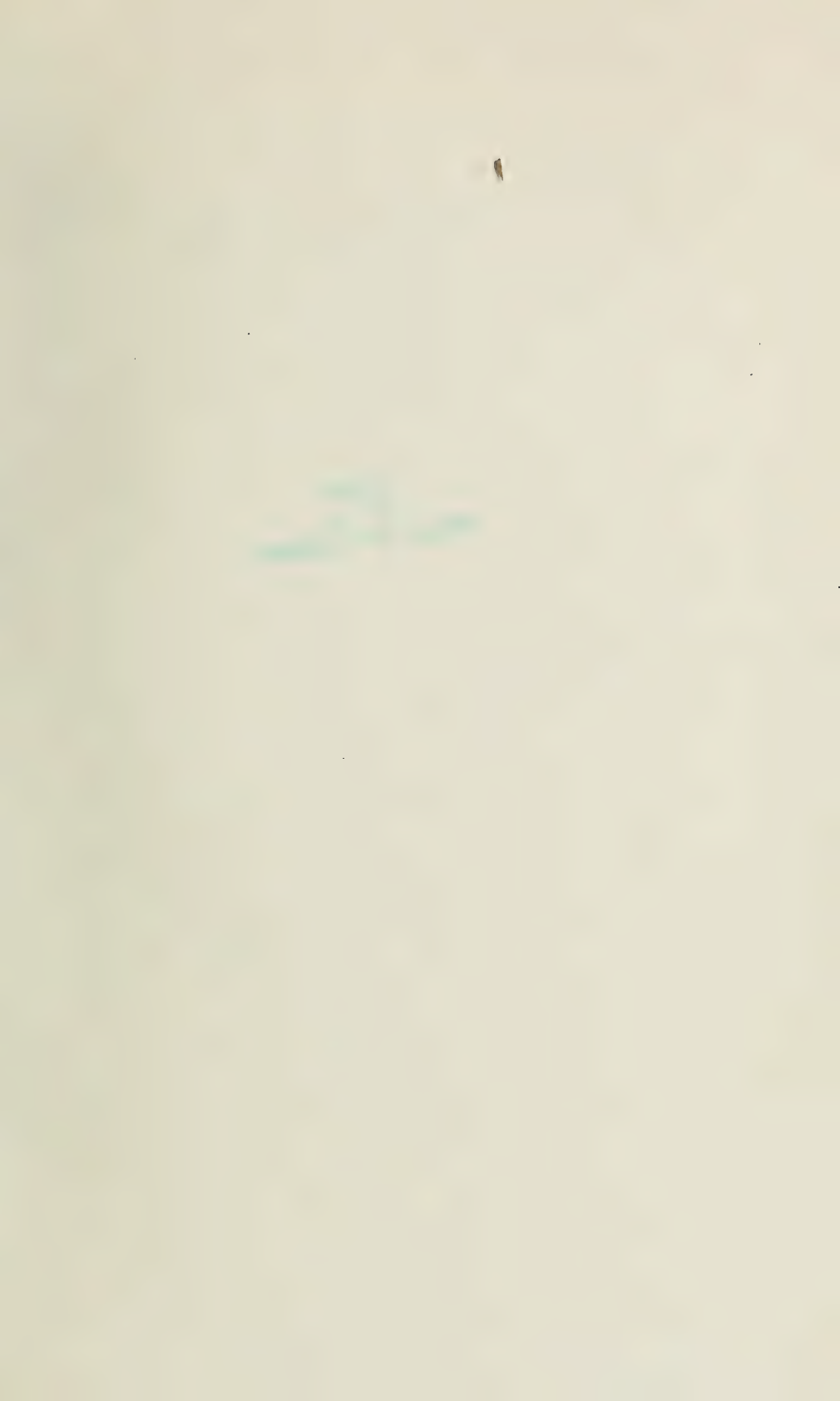
A WELL dressed young man entered the studio of Mr. MORRIS YOGG, at Springfield and Brown streets, Newark, recently, and asked to have his picture taken, wishing, as he said, to look as smart as possible. He asked the photographer for the loan of his watch and chain just for the sitting. While the photographer was busy with his camera, the stranger dashed into the street and was soon out of sight. Mr. YOGG is mourning his loss and the police are hunting for the thief.

A NEW corporation, termed "THE WILKINSON COMPANY," has just been formed in Chicago with a capital stock of \$40,000 for the manufacture of photographers' goods. The incorporators are Arthur J. Eaton, Archibald C. Jewell and O. H. Watson.

A TRICKSTER has, of late, been very successful in victimizing the people of Providence, R. I., by calling at their residences, where he shows several interior views of a fine quality, saying that he will take six of any room for \$1; the people arranging the furnishings to suit themselves, but paying him fifty cents in advance. He then sets the time and day for the taking of the pictures, but, needless to say, he is never seen again. As he is sharp enough to keep a good survey of the land traversed, never making a second call at the same house, he has not yet been captured.

TABLE OF CONTENTS.

| | PAGE | | PAGE |
|---|------|--|------|
| A HAPPY OCCASION..... | 151 | OUR ILLUSTRATION..... | 151 |
| AMERICAN INSTITUTE—PHOTOGRAPHIC SECTION.—ANNUAL DINNER..... | 155 | PHOTOGRAPHY AND METEOROLOGY, by Professor A. L. Colton..... | 137 |
| COLLODION AS A SUBSTITUTE FOR ALBUMEN IN POSITIVE PRINTING.—PART II (continued), by Walter E. Woodbury. | 147 | TEST PAPERS AND THEIR USES..... | 129 |
| EDITORIAL NOTES..... | 130 | THE CHEMISTRY OF THE METALS OF THE GOLD CLASS AND THEIR SALTS, AND THEIR BEHAVIOR IN PHOTOGRAPHY, by P. C. Duchochois..... | 140 |
| LETTER FROM GERMANY, by Dr. H. W. Vogel..... | 133 | THE COLORADO CAMERA CLUB..... | 150 |
| MORE POSITIVE PRINTING METHODS, by Abe Lizzard..... | 149 | THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA..... | 153 |
| MORE WONDERS OF ELECTRICITY..... | 152 | VIEWS CAUGHT WITH THE DROP SHUTTER..... | 159 |
| OBITUARY..... | 152 | WHAT OUR FRIENDS WOULD LIKE TO KNOW..... | 158 |
| ON ENLARGING FROM SMALL NEGATIVES, by Mr. W. I. Chadwick..... | 143 | | |





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ANTHONY'S

Photographic Bulletin.

EDITORS :

PROF. CHARLES F. CHANDLER, PH.D., LL.D.

PROF. ARTHUR H. ELLIOTT, PH.D., F.C.S.

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VARIATIONS IN SUNLIGHT AND EXPOSURE TIMES.

OUR experience with amateur photographers in general has led us to believe that the question of the relative photographic intensity of the light, at different times of the day throughout the year, is a subject to which sufficient attention has not been given.

It is our purpose, within the limits of this article, to give such data as may be necessary for a better understanding of the various times of exposure necessary to obtain a negative of the same density throughout the twelve months of the year.

The actinic power of the sun's rays is calculated on a decimal scale, 100 being the maximum. The months in which the minimum times of exposure are necessary are practically June, July and August, between the hours of 11 A.M. and 2 P.M. This exposure time is taken as the unit of our system and is represented by 1; so that all other figures represent the numbers by which the time of minimum exposure is to be multiplied to fit that particular case.

JANUARY.—Actinic power of sun's rays, 7. Relative times of exposure : 9 A.M., 18; 10 A.M., 16; 11 A.M. to 1 P.M., 14; 2 P.M., 16; 3 P.M., 18.

FEBRUARY.—Actinic power of sun's rays, 14. Relative times of exposure : 9 A.M., 10; 10 A.M., 8; 11 A.M. to 1 P.M., 7; 2 P.M., 8; 3 P.M., 10.

MARCH.—Actinic power of sun's rays, 23. Relative times of exposure : 8 A.M., 6; 9 A.M., 5; 10 A.M., 4.5; 11 A.M. to 1 P.M., 4.2; 2 P.M., 4.6; 3 P.M., 5; 4 P.M., 6.

APRIL.—Actinic power of sun's rays, 42. Relative times of exposure : 8 A.M., 5; 9 A.M., 4; 10 A.M., 3; 11 A.M. to 1 P.M., 2.1; 2 P.M., 3; 3 P.M., 4; 4 P.M., 5.

MAY.—Actinic power of sun's rays, 79. Relative times of exposure : 8 A.M., 1.4; 9 A.M., 1.2; 10 A.M., 1.1; 11 A.M. to 1 P.M., 1.2; 2 P.M., 1.4; 3 P.M., 1.6; 4 P.M., 1.8; 5 P.M., 2; 6 P.M., 2.8.

JUNE.—Actinic power of sun's rays, 98. Relative times of exposure : 8 A.M., 1.4 ; 9 A.M., 1.2 ; 10 A.M., 1.1 ; 11 A.M. to 1 P.M., 1 ; 2 P.M., 1 ; 3 P.M., 1.2 ; 4 P.M., 1.4 ; 5 P.M., 1.6 ; 6 P.M., 2.5.

JULY.—Actinic power of sun's rays, 1.00. Relative times of exposure : 8 A.M., 1.4 ; 9 A.M., 1.2 ; 10 A.M., 1.1 ; 11 A.M. to 1 P.M., 1 ; 2 P.M., 1 ; 3 P.M., 1.2 ; 4 P.M., 1.4 ; 5 P.M., 1.8 ; 6 P.M., 2.7.

AUGUST.—Actinic power of sun's rays, 98. Relative times of exposure : 8 A.M., 1.8 ; 9 A.M., 1.4 ; 10 A.M., 1.2 ; 11 A.M. to 1 P.M., 1 ; 2 P.M., 1.2 ; 3 P.M., 1.4 ; 4 P.M., 1.8 ; 5 P.M., 2.4 ; 6 P.M., 3.

SEPTEMBER.—Actinic power of sun's rays, 77. Relative times of exposure : 8 A.M., 2.5 ; 9 A.M., 1.9 ; 10 A.M., 1.6 ; 11 A.M. to 1 P.M., 1 ; 2 P.M., 1.6 ; 3 P.M., 1.9 ; 4 P.M., 2.5 ; 5 P.M., 3.

OCTOBER.—Actinic power of sun's rays, 47. Relative times of exposure : 8 A.M., 5 ; 9 A.M., 4 ; 10 A.M., 3 ; 11 A.M. to 1 P.M., 2.2 ; 2 P.M., 3 ; 3 P.M., 4 ; 4 P.M., 5.

NOVEMBER.—Actinic power of sun's rays, 19. Relative times of exposure : 9 A.M., 7 ; 10 A.M., 6.25 ; 11 A.M. to 1 P.M., 5.2 ; 2 P.M., 6.25 ; 3 P.M., 7.

DECEMBER.—Actinic power of sun's rays, 9. Relative times of exposure : 9 A.M., 18 ; 10 A.M., 14 ; 11 A.M. to 1 P.M., 11 ; 2 P.M., 14 ; 3 P.M., 18.

For instance, suppose that a certain subject requires at noontime in July with full sunlight an exposure with an $f/16$ stop of $\frac{1}{50}$ second, and it is desired to ascertain what would be the proper exposure for the same subject at 3 P.M., in October.

Reference to the month of October in the preceding paragraphs, under the head of relative time of exposure, 3 P.M. gives 4 as the number by which $\frac{1}{50}$ second is to be multiplied; hence the exposure required is $\frac{4}{50}$ second.

Suppose, however, that the first known exposure of $\frac{1}{50}$ second was in May, 3 P.M. or some other time which did not require the minimum of exposure, 1, and the proper exposure for October, 3 P.M., was desired. The calculation would then be as follows : May, 3 P.M., gives the figure 1.6; October, 3 P.M., gives the figure 4; then, $1.6 : 4 :: \frac{1}{50} : x$. $x = \frac{4}{50} =$ exposure required.

In addition to the foregoing, we deem timely a few words on the subject of various stops, and the variations in exposure which a change of them renders necessary.

The present method of expressing the value of a stop is in terms of the focal length of the lens with which they are employed, thus giving a figure which is capable of comparison with that similarly obtained in any other lens of like construction, even though of different make.

The amount of light received by a plate depends upon, first, the distance of the object from the plate, and secondly, the size of the opening. From the same standpoint, the difference in the distance between the object and the plate will depend practically upon the difference in focus of the two lenses.

In expressing, therefore, the *diameter* of the stop in terms of the *focal length*, we embody both the variables upon which difference in illumination depend.

It must further be borne in mind that when considering the light value of any two stops of the same lens, the value f is constant, and the expression $f/16$ and $f/40$ represent the actual diameters of the openings. Now the area of any two circles is proportional to the squares of their diameters, and upon the area depends the amount of light admitted.

Suppose with an $f/16$ stop an exposure of 2 seconds was necessary, with an $f/10$ stop $\frac{25}{32}$ seconds would be the proper time.

Two things are here to be considered. First, the areas of the two stops, and hence the amounts of light they admit, are directly proportional to the squares of their diameters; and second, the exposures are inversely proportional to the amount of light admitted to the plate. This means that *the exposure is inversely proportional to the squares of the diameter of the stops*. As f is a constant, we may represent it by 1 and we then have the following proportion :

$$(\frac{1}{10})^2 : (\frac{1}{16})^2 :: 2 : 4 = \frac{1}{100} : \frac{1}{256} :: 2 : 4 \times 2\frac{20}{256} = \frac{25}{32} = \text{required exposure in seconds as above.}$$

At first sight this may seem somewhat complicated, but once having mastered the principles it is always possible to deduce the necessary formula, and the calculation becomes not only a matter of habit, but a mental one.

EDITORIAL NOTES.

MICA is now being imported into England quite extensively from Switzerland for use in photography as a basis for dry plates in place of glass or celluloid. It is obtainable in considerable quantities, and has been quarried in blocks as large as 12 inches square. Its weight is only from one-twentieth to one-fortieth that of glass, and its transparency is almost as great. It is said to work admirably.

THE second annual exhibition of the Camera Club of the University of Pennsylvania was given on the 4th inst., on which occasion some two hundred slides were shown. Most of them were of European scenery, and several of them, of the roads to be found in the old country, which were compared with some in our own neighborhood, not to the advantage of the latter. Mr. John Carbutt explained the pictures in his usual happy style.

THE amateurs of Chattanooga, Tenn., have effected an organization, with the following officers: President, S. C. Dodge; Vice-President, J. C. McDonald; Secretary and Treasurer, W. M. Brown.

WE are informed that our publishers have received a shipment of para-amidophenol chloride, which is rapidly coming into use as a developing agent, and which bids fair to become very popular.

WE would acknowledge receipt from W. L. Minns, of New London, Ohio, of a cabinet print of a child which is of great merit both from an artistic and a technical standpoint. It is a print which would do credit to any professional, and as the artist writes he is a farmer boy, seventeen years of age, without any one to help him in his study of the fascinating art, he is so much the more to be congratulated. The pose is unique but full of grace, and the technical points of exposure, development and printing excellent.

We predict success in his future work.

Dr. F. STOLZE, in his recent work, speaks highly of para-amidophenol as a developer for bromide paper owing to its extreme rapidity, which he believes tends to keep the image on the surface of the paper, and as the developer does

not become strongly discolored, the whites remain clear and brilliant—washing in acidified water is not necessary with this agent. Dr. Stolze's formula is as follows :

| | |
|--|--------------|
| Sodium sulphite solution, 25 per cent..... | 1,000 parts. |
| Para amidophenol..... | 20 “ |
| Caustic lithia..... | 5 “ |

THE Newark Camera Club gave its fourth annual dinner on the 24th of last month, on which occasion a most enjoyable evening was passed by all present. The menus were the work of P. L. V. Thiery, the Vice-President of the club, and were beautiful and appropriate. Mr. Thiery, in the absence of the President, Chas. Leroy, responded for the club to the first toast, and was followed by numerous speakers. The evening was pleasantly varied by several vocal selections and the whole entertainment reflected great credit on the committee in whose charge it was, made up of Dr. Chas. A. Meeker, David S. Plumb and George H. Simonds.

THE award of prizes in the recent very successful exhibition of the New Orleans Camera Club was made in the latter part of last month, and resulted in C. A. S. Du Quesney receiving a gold medal for the most artistic silver print; Paul Reynes a gold medal for the best platinotype; Horace Carpenter one for the finest transparency, and S. L. Mitchell one for the best general exhibit. Honorable mention was awarded R. H. Palfrey, S. F. Lewis and Mrs. J. C. Kendall. Much satisfaction was expressed with the awards and the exhibits which elicited them.

WE have to express thanks for invitations to a reception by the artists in the Holbein Studios, the lantern slide exhibition in aid of the earthquake sufferers in Japan by the California Camera Club, and the illustrated lecture given by the Photographic Society of Philadelphia, and to express our regrets at enforced absence from all, distance and more pressing engagements having made it impossible to attend.

THE following formula for collodion emulsion with chloride of silver, for transparencies is highly commended, and it is advised that the plates be first coated with a thin layer of gelatine in a ten-grain solution :

| | |
|---------------------------|------------|
| Pyroxyline (powdery)..... | 4 grains. |
| Calcium chloride..... | 5 “ |
| Citric acid..... | 1 “ |
| Silver nitrate..... | 16 to 17 “ |
| Ether..... | ½ ounce. |
| Alcohol..... | ½ “ |

This emulsion will be found excellent for printing out.

WE are in receipt of two “Aristo” prints from C. W. Langdon, of Lancaster, Wis., excellent in tone and finish, which Mr. Langdon writes were made without the use of the softening solution and toned with an acetate of soda bath made slightly alkaline with phosphate of soda. No better results could be desired or expected from any formula than these.

HERR WISCHEROPP, in speaking of successful platinum printing, claims that a chemically pure solution of an iron salt is requisite, and that the coating should be dried upon the paper as quickly as possible, before it has a chance to penetrate into the paper; this, he claims, is best effected by hanging the paper for two minutes in a box at a temperature of 133 degrees F. The formula he recommends is as follows :

| A. | |
|-----------------------------------|-----------|
| Sodium ferrous oxalate..... | 40 parts. |
| Sodium oxalate (3 per cent.)..... | 100 " |
| Chlorate of potassium..... | 0.1 part. |
| B. | |
| Potassium platino-chloride..... | 10 parts. |
| Distilled water..... | 60 " |

The solution A requires to be frequently made fresh, as its keeping properties are not good, but B will keep indefinitely. The printing should be done as rapidly as possible and paper previously kept in the darkroom for some time, to insure the best results.

THE third and last lecture of the course was given by Mr. S. R. Koehler, of the Boston Museum of Fine Arts, on February 25th, on the subject of photo-mechanical processes, and was, like its predecessors, fully illustrated by blocks, plates, etc. It was of much interest and value to those who heard it.

WE have before us two portraits from the studio of W. W. Saunders, of Bethlehem, Pa., on "Aristo" paper, which are excellent examples of what can be done with this medium.

THE forthcoming exhibition of the New York Camera Club, which is to be held from March 21 to April 2, is looked forward to as promising to be of unusual interest.

THE New Britain (Conn.) Camera Club is prospering well and will soon be better known in photographic circles than now. The Queens County Camera Club also report progress and a healthy state of vitality.

THE following speakers and subjects are announced in the course before the Society of Amateur Photographers of New York : April 5th, "Dry Plates," James H. Stebbins, Jr.; May 10th, "Photo-Mechanical Processes," Professor Chas. F. Chandler; March 22d, special lecture entitled "Recent Researches in the Solar Spectrum," Professor L. H. Laudy; April 5th, "Practical Talk on the Carbon Process," with demonstrations, by Dr. Leo Backelandt; April —, "Arctic Regions," Professor Bradford.

A TIN ALLOY WHICH ADHERES CLOSELY TO GLASS AND METALS.—An alloy of 95 parts tin and 5 parts copper is recommended for connecting metals with glass for photographic and other purposes. The copper is poured into the molten tin and stirred with a wooden mixer and afterward melted. It adheres closely to clean glass and has a similar expansion. By adding $\frac{1}{2}$ to 1 per cent. of lead or zinc the alloy may be rendered softer or harder, or more or less fusible, as desired. It may be used for coating metals, giving them a silvery appearance.

—*Pharm. Era.*

OUR LETTER FROM FRANCE.

BY LÉON VIDAL,

Editor Moniteur de la Photographie.

The Question of Colors.—Synthetical Process with the Triple Lantern.—Stereoscopic Vision.—The Lectures at the Conservatory.—Aristotype Paper.—The Velo-Photo Exhibition.—The Sorting of the Colors without any screen exterior to the Plate.—Telephotography.—Who does a Photographic Negative belong to?—The Progress of Phototypography.—Photochromo-Engraving.—Photographers' International Association.

THE question of the direct reproduction of the colors by photography becomes more and more the order of the day. Last January's BULLETIN announces under the signature of my learned colleague, Dr. Vogel, this matter to be no longer a problem, but a fact discovered jointly by Mr. Ulrich and Dr. Vogel, Jr.

It is far from us to doubt until we have proofs to the contrary the correctness of such an assertion. We are only surprised, for the news is already at least one month old, not to have heard any more about it, and to learn a fact of such tantamount importance through a mere paragraph in a letter.

It would seem to me that such a discovery should be vested with a scientific character rather than with an industrial one. Again, we are very much astonished to learn that a permit should have been solicited and granted to reproduce the Art Gallery pictures before attracting the attention of the scientific world by the exhibition of results so anxiously looked for, for so long a time, such as genuine specimens of work produced and destined to convince the incredulous, of whom there are many.

While we wait new schemes are being promoted upon some basis of a similar nature. A company with two million francs has just been organized in Paris to work a polychromic photographic process, so far kept secret, naturally, the application of which, as well as the promptness in its execution, are going to surprise the world. Still they come.

A journal of Great Britain assures us that an English inventor has invented a process for the reproduction of the natural colors. The discovery of the photography of the colors of nature has been so often brought forward as an accomplished fact that we have become rather skeptical on the subject; but, wait and see.

What is, perhaps, of greater moment is the announcement by the Messrs. Lumière of their belief in having succeeded to bring about, by the method of interference, the reproduction of two composite colors.

We will return to this subject when the specimens of this process shall be in our possession, as has been promised us.

In this connection we cannot consider the process of uniting together negatives of one and the same polychromic object as a direct one for reproducing the natural colors. The pigmentary print, by the aid of the said negatives, yields only a production in colors more or less exact, according to the process. A production of this nature depends very greatly on the value, firstly, of the prototype; secondly, on that of the nature of the pigments employed.

Such a composite process of photochromy is therefore very far from being considered as furnishing the solution of the problem or one of its solutions. It is a highly interesting application of photography to the formation of poly-

chromic images, but it is not at all a solution, as there are too many causes for error, and consequently for incorrectness, in the copies.

The synthetical process, as practiced by Mr. Ives, a kind of highly attractive experiment, pointed out about 1869, by Mons. Cros, and also by Ducos du Hauron, might more rationally lead to a reconstruction approximately correct, were the preliminary sorting of the colors a perfect one, and the colored mediums employed in the triplex camera well selected; but those images, so admirable as regards effect, are unfortunately fugitive, so that when we wish to fix them by means of a pigmentary impression we are very far from attaining such a result.

I have just repeated these experiments in my lecture at the Conservatory of Arts and Trades, and with the greatest success.

We hope, at the next meeting, to further increase the illusion by bringing before the audience the high relief effect in addition to the colors.

Regarding the lectures at the Conservatory, we will add that they are always attended by an audience as large as the room can accommodate, about 800 persons.

Since my last correspondence three lectures have taken place. Mine was about "Photo-engraving and Chromophotography." This last mentioned subject excited a vivid interest, as is always the case whenever the subject of colors is brought forward.

The second lecture was an interesting discourse on lenses by Mons. Wallon, who, despite the apparent dryness of the subject, kept his audience fully interested.

Mons. Trutat treated in the third lecture on the value of "Photography as a Recording Medium"; in which capacity photography may be indefinitely applied. Mons. Trutat being a naturalist, one may conceive how eloquently he discussed its application to natural history. He took up specially the subject of glaciers, which he explained with the help of numerous and remarkable lantern slides. The Alps, the Pyrenees, Niagara, the Polar Seas, the whole world of ice and snow, in short, were passed in review. There was perhaps little of photography in it, though anyhow extremely interesting, specially so on account of the complete lantern slides due to photography, which made it possible to visit, without danger and so rapidly, so many heights, depths, icebergs, the packing and breaking up of ice, etc., etc.

The paper called Aristotype is invading more and more on photography, to the detriment of the albumenized. The house of Lumière now manufactures an excellent one.

The Photographic Exposition (called International) which is being organized in Paris to take place in April does not seem to meet with the full favor one was led to expect, as it was to just take hold of everything. It will thus be, under cover of photography, nothing more than an "Exhibition-Bazaar," rather a "Velo-Photo Exhibition," considering the importance which has been accorded to bicycling, and a pamphlet has just appeared where, in an attractive way, the united advantages of both these industries are praised up as fitting so well together that a camera can be attached to a bicycle.

The same may be said, however, with regard to the sea, the land, the air, the balloons, etc. It really can be placed anywhere.

When I referred to the subject of the sorting of the colors at the beginning of this correspondence, I omitted to say that for the greater facility in obtaining

from nature the proper negatives for polychromic projections, the outside screens are left out. This is equal to saying that the proper tint which takes the place of the movable screen, or whatever this may be, is incorporated in the sensitive film. This tint is inert as regards the special properties of plates, and its only function is that of a screen, with the further advantage that rapidity and delicacy are thereby gained.

A great deal of discussion is going on at present on the subject of telephotography by reason of the recent researches of Messrs. Jarret, Dallmeyer, Miethe and others. Reproductions of objects at a distance of 1,000 meters have been exhibited by Nadar. In this regard Commandant Fribourg says that attempts should be made to photograph more important distances, distances not less than 5,000 or 6,000 meters. With the device adapted by Mons. Jarret, a French optician, views have been taken at a distance of 7,000 meters.

Treating of this subject, the *Le Bulletin Belge de Photographie* publishes comparative prints, by Dallmeyer, reproducing a view at a distance of a quarter of a mile. The telephotographic print is five times larger, for the same object, than that obtained with a rectilinear lens of the same focal length.

The same paper has undertaken to publish a series of articles on the ownership of photographic negatives. It seems idle to waste time in showing that a photographic negative belongs to the photographer, unless a special agreement to the contrary be made; and this is as it should be.

Phototypography is accomplishing wonders in the United States of America, to judge from the illustrations with which the Reviews abound. Such progress is still far from taking root in France. However, we have to record the fact that photochromo-engraving is, on the contrary, making much headway with the house of Boussod, Valadon & Co., as shown by the February number of *Figaro Illustré*. It seems to me as if manual labor had been replaced by some purely photographic combine. It is doubtless a great step.

An appeal has just appeared having for its object the merging of all photographic societies into one great head or center, "The Universal Photographic Union." Such a step would evidently harm no interest, but what good purpose is it going to accomplish? These federations are the cause of a great deal of waste of time and money by which but few will profit without the slightest advantage to the masses. It may be that we do not yet quite understand the weight of such a movement. For this reason, we propose to be on the lookout and reserve for the future our appreciation of it.

PARIS, FEBRUARY, 1892.

THE APPLICATION OF ART TO PHOTOGRAPHY.—No. 2.

BY H. P. ROBINSON.

To this chapter I give an illustration taken from one of my own pictures, and I intend to tell you all I know about it, describing its birth, education and—but I will leave the record of its death for a future chapter. I know that its death must come, for I am going to ask our editors to allow my readers to criticise this photograph as far as they can from the reduced illustration and to worry it into its grave to the best of their ability. For this idea we are indebted to Dr. E. L. Wilson, who introduced the diversion into his magazine two or

three years ago in happy imitation of the ancient Greek painter who exposed his work to the critics, asking them to put a daub of paint on any part they disapproved—and soon found that none of his picture was left ! I do not know any better way of making photographers *think*. It being, however, taken for granted that before a man writes his opinion on any subject he should make himself sure that he owns such opinions.

On the banks of a river on the borders of Wales I met with a very fine patch of a plant once common but now almost cultivated off the face of the earth, called Butter-Bur. It is the largest leaved native plant in this country and is sometimes known as wild-rhubarb. The old herbalists used to value it as a remedy for the plague, because it “lived under the dominion of the sun.” In our times we place it under the dominion of the sun in another fashion. It struck me that this would make a fine foreground, and also being rather rare, would be worth making a prominent feature in the landscape. The group of plants therefore was to be the chief object in the picture, and the other parts subordinated and made to add to the effect. This is what Ruskin affectedly calls the law of Principality, but I think we shall get on better without the use of hard words. The chief object of interest of course claimed the best of the focus, which was improved by the use of a very considerable extension of the swing-back, to the utter disregard of scientific fact, which really has no business to interfere in a picture of this kind ; the trees and distant parts of the landscape being kept subordinate, and the figure placed so as to give size, as well as to balance the composition. I should have been glad to have broken up the bit of straight line in the mid-distance, which catches the eye, but this was not possible—one of our exasperating limitations—and I should have preferred a slightly wider angle, so as to allow a little more space over the trees. There were difficulties in getting further away from the subject. I may be told that this is no more than making the best of a botanical specimen, but this is not so. Botany is kept subservient to pictorial effect, and there is no reason why a botanical specimen should not be the chief object in a picture if it is picturesque enough, as it is in this case. I cannot claim that the title “Mayfly Time” denotes the exact period of the year, for as a matter of fact, the mayfly, like the hawthorn blossom we call “May,” comes on early in June, and when the old poet sang of the time

“When well-apparel’d April on the heel
Of limping Winter treads,”

he was probably speaking of a time which was equivalent to our May. The omission of eleven days from our calendar in the middle of the last century has upset a good deal of our poetry and the names in nature we got from our forefathers.

It is not easy to conceive an agreeable picture that has not some approach to breadth of light and shade. It may please in other ways—in drawing, detail and subject—and be admirable in separate portions, but without breadth there can be no perfect satisfaction to the eye. Some painters, and recently some photographers, have held that detail and breadth cannot exist together, and would sacrifice all other qualities, even those most distinctive of the art, for the sake of breadth. This would be to throw away the substance for the shadow. That breadth is not incompatible with detail is shown in many pictures, and, I think, in our illustration ; moreover, it was not an accident. Different effects of light

were watched at different hours and in different weathers, and the one selected that gave the broadest effect on the foreground, leaving the rest of the picture as unobtrusive and gray as was consistent with a proper making out of the forms and masses.

The subject being so full did not require an elaborate sky, but what little there was had to be carefully considered. A line of clouds in the wrong direction would have ruined the composition. The bit of sky added from a separate negative, apparently of little importance, completes the composition, and is of the greatest value to the general effect. The curved line of light was carefully selected to oppose and contrast the line of the foreground and help to form that wedge shape which results in so much variety. The light clouds also repeat, or more faintly echo, the broad mass of light formed by the mass of foliage in the foreground. I don't know if the photogravure will accurately reproduce the faint light of the cloud to the right of the trees, but it is very necessary that this light cloud should be continued behind the trees. These delicate gradations make the trees stand out from the sky and flatness is avoided. To my eye this picture is unusually stereoscopic in effect, caused by the gradations and the receding perspective of the large leaved plants.

Photographers do not seem even yet to appreciate how exceedingly valuable the sky would be to them if they only knew how to take proper advantage of it. Apparently out of our reach, it is the one bit of nature that is most plastic in our hands. With a properly selected sky we can alter our composition and rule our chiaroscuro. Every landscape photographer should make a collection of skies for future use, always noting the time of year and day, as well as the direction of the sun, and making notes of the aspects of nature at the time. It is not always the finest and grandest effects that are most useful, as the little break in the misty clouds used in this picture will show.

The title of the picture may puzzle some of my transatlantic readers, and a slight explanation may justify a little deviation out of the photographic track, if not out of the pleasant byeways of nature, that devotees of our art love. And, indeed, I think that if, apart from its value as a bread-winner, the greatest good beneficent photography has done the world could be estimated, it would be found that its extraordinary powers of inducing mankind to seek and enjoy nature would be one of the greatest.

The title of the picture is thus accounted for. The most enjoyable fishing in England, except, perhaps, that of which the lordly salmon is the victim, is trout fishing, and the best time of the year for it, on some rivers, the last days of May and the early part of June, during which short period that well known ephemera named by fishermen variously the Mayfly, the Cadon or the Green Drake, is on the water. These beautiful insects come on the water in thousands, and the trout feed on them ravenously, are then in their best condition, and are more lively than at any other part of the year. This is the fly-fisher's festival, and fortunate is he who has a length of preserved water on which to enjoy his sport. For this he has year by year to go further and further away from the great centers of population, and seek his sport far from the haunts of busy men. The country at this time is at its best, and the season seems made for the universal rejoicing of all the creatures in existence. It is the holiday of nature, and she opens her house to all her guests. It is early summer, and the trees are bursting into leaf; the chestnuts, in advance of the others, are in blossom, and the

hedges white with fragrant "May." Although the primroses, cowslips, violets, anemones and wild hyacinths are over, the country flushes with myriads of flowers and the delicate tints of spring. The larks sing in the air, and the black-birds and thrushes in the trees, while the "wandering voice" of the cuckoo comes from neighboring copse or distant wood, and butterflies skim from flower to flower; the hum of insect wings is in the air. Early June is, in fact, as I have said, the real May of the poets, and not only the best time for trout fishing, but the most enjoyable for studying the beauties of nature, with or without the camera.

There are some artists who can find poetry only in gloomy weather, and prefer to take their photography sadly; but to the healthy mind there is as much



inspiration in the birth of nature as in its death, and as beautiful pictures in the rejoicings of spring as in the sadness of the fall.

I have purposely abstained from saying anything about the mechanical part of the production of this picture. To state what lens it was done with, or what developer, would only be to drag a red herring across the trail of art and confuse the chase. There is no art in these things, and the rock on which many photographers, who honestly desire to make pictures, split is, that picture making is to be secured by the choice of tools and processes. I do not wish to say a word against the use of good and suitable tools; my objection is to the idea that they

are all in all. To state the case broadly: almost any tools will, in the right hands, make pictures; no tools, however well adapted or costly, will make pictures unless directed by artistic skill and knowledge.

COPYING ENGRAVINGS.

BY P. C. DUCHOCHOIS.

How to copy an engraving by means of the camera obscura and a lens is one of those operations of photography which are too well known to be mentioned again. Moreover it does not present a great difficulty either by the collodion wet process, which is the best for that purpose, or with dry gelatino-silver bromide plates, provided, however, one compounds the developer to obtain intensity and exposes the minimum of time. For gelatine photo films we think that hydroquinone is the most reliable developer for copying, on account of its great tendency to produce contrasts and density, but old developing solutions should be discarded as apt to produce yellow fog. Rapid development we also found advisable to obtain clear negatives and an opaque reduction.

What we intend to discuss in this paper is:

- 1.—How to copy engravings full size without a camera obscura and a lens.
- 2.—How to obtain the best results when copying engravings whose paper has by time turned brownish yellow.
- 3.—How to remove stains on engravings and bleach the paper.
- I.—To photograph an engraving—any print in greasy ink—it suffices to place it in contact with a photo film, and after exposure to light to develop the negative in the ordinary manner.

Generally it is advised that the print be made transparent by oiling it with a mixture of castor oil and benzine, etc.; but although the greasy substance can be dissolved out when the photograph is made, there is always a risk, no matter how little, of spoiling the print. As good results can be obtained by copying the prints as they are, and, although not absolutely necessary, interposing at a little distance between the print and the source of light, that is, on the exterior of the glass plate of the printing frame, a sheet of tracing or tissue paper to diffuse the light and render it less active.

The exposure varies, of course, with the actinic power of the light. About a minute suffices with rapid gelatine photo films when exposing at a distance of 18 or 20 inches (25 to 50 centimetres) from a gas burner or a duplex petroleum lamp, the light being projected in parallel rays by a parabolic reflector. When collodion dry plates are used the exposure should of course be very much longer, but this is compensated for by the facility with which the image is developed. The grain of the paper is necessarily reproduced, not, however, so as to be objectionable. When excessive sharpness is not imperative the granulation can be avoided, but then the lines of the engraving will be softened by slight blurring, without, however, impairing the general effect of the picture, unless the light exactly falls on the print at right angles during the whole exposure time, which is easy when using an artificial light. For the purpose in question one should place a sheet of paper between the engraving and the photo film.

Aqua-tint engravings to be reproduced by the photo-typographic process

(relief blocks), should be photographed by interposing a ruled (cross lined) screen. As mentioned above, if the light is not well directed there may result a curtain blurring, varying with the thickness of the screen, which will impart a pleasing softness to the picture.

Illustrations can be reproduced in this manner of operating without detaching them from the book. The dry plate is placed in contact with the engraving, upon the latter is placed a clear glass plate and on the back of the former a thick black cardboard, the whole being held by clamps or screws, and, in order that the light does not find its way to the photo film, which would produce fogging, the edges of the plate should be varnished with a thick solution of bitumen in benzole.

II.—To copy old prints whose paper has turned yellow and obtain good whites, the first idea which occurs to any one is that of bleaching the paper. It is quite easy. We have done it ourselves by damping the print in diluted solution of hydrogen dioxide (oxygenated water), to which a few drops of aqueous ammonia have been previously added, or in the same but ozonified compound, which acts more effectively. Of course one should proceed by successive applications and rinsing. Another bleaching process, which was suggested by Roscoe, is to submit the print to the action of nascent ozone formed during the slow oxidation of phosphorus. For that purpose the print (engraving), lithograph, etc., is rolled in a large cylinder at the bottom of which is suspended over water a stick of phosphorus, whereby in a certain period the paper assumes its original whiteness.

Bleaching is, however, sometimes objectionable. Etchings from Rembrandt, engravings by Albert Durer, the wood-cuts of the beginning of the fifteenth century, etc., some of them being worth many hundreds of dollars, are too precious for one to run the risk, no matter how slight, of spoiling them, at least for the mere purpose of obtaining a photo-copy with very good whites. Moreover the yellowness of the paper is characteristic of the antiquity of the proofs, and, besides, improves the appearance of the image by softening the violent and not very harmonious contrasts of white and black.

When bleaching the paper is out of question, the process we advise to use in order to obtain good or fair whites is to make the negatives on orthochromatic films sensitive to yellow without the interposition of a yellow screen, which in this case is quite objectionable, or, when working by the collodion wet process, to use a collodion prepared only with a mixture of equal parts of ammonium and zinc bromide, and to place between the lens and the sensitive film a light blue screen; blue and light yellow from greenish blue, which is by far more actinic than either green or yellow.

We have obtained good results by simply placing the print under a glass plate slightly stained blue. It is a good plan when copying the same size by contact, but if by the camera it is difficult to avoid reflections.

On the whole, as the exposure time is very long for collodion plates when small diaphragm and long focus lenses are used, which in working by the wet method leads to well known failures—surface markings, pin-holes, etc.—we prefer dry films, either gelatine or collodion dyed for yellow and green, and exposing with the interposition of the blue screen, as before explained.

III.—We shall now complete these instructions by describing reliable and simple processes for removing stains on prints and the yellowness of the paper.

Stains are of two kinds : 1st. The greasy stains, from oil, tallow, butter; 2d. Those produced by dampness, dust and iron (rust).

To remove the latter stains and revive the whiteness of the paper, proceed as follows :

Place the print on a table covered with several sheets of blotting paper over which is laid a napkin or a piece of calico, and damp it by gently dabbing with a sponge imbued with water. When the paper is well spread, brush over the stains with a solution of javelle water, and let it set for a few minutes, keeping the paper damp by new applications of the javelle water until the stains appear pale yellow. Then wet with a solution of potassic oxalate, 2 per cent. in water, and in about half an hour the print will be clear and the paper white. This done, the print is covered with a few sheets of blotting paper to absorb the excess of water ; then brush to the width of about half an inch (1 centimetre) a little starch on the edges, and paste it on a smooth board, where, by allowing the paper to dry spontaneously, it stretches to its original dimensions.

When the proof to be cleaned is not large it may be imbued with water, then placed in a tray, and one pours upon it a little javelle water, agitating so that this water be equally distributed all over the print. In this the print can be left during twenty-four hours without danger of being spoiled.

The javelle water being poured out, is replaced by the solution of potassic oxalate, and when the print is cleaned and bleached it is washed with the usual care.

Paper sized with rosin resists the action of weak acids, but that sized with gelatine does not. To again size the print it suffices to dissolve on a water bath 1 part of gelatine in 50 parts of water, and in this to size the print by immersion to give to the paper the same consistence as before.

Greasy stains are more difficult to remove. Two processes can be employed. The first one consists in preparing a solution of white soap (Castile soap), which is employed like javelle water, renewing it every ten minutes, and brushing with a camel brush from time to time to ascertain whether the stains disappear. If necessary, a little caustic potash or soda can be added to the lye, or, better still, some caustic lime. But these compounds should be used in very small quantities, for, if the alkalies dissolve greasy matters, they also act on cellulose, and may alter the paper as a consequence.

Oily and greasy stains are easily removed with fresh turpentine oil (not resinified) heated on a water bath, or with pure benzole. Turpentine gives to the print a kind of oily appearance, which disappears by washing with alcohol also heated on the water bath.

All these processes can be relied upon, as also the bleaching by hydrogen dioxide. They present no danger whatever of spoiling the print, but a little experience is necessary.

"HAVE you Goldsmith's Greece?" inquired a customer of the new clerk in a drug and book store.

"Just out of it," replied the clerk. "Won't vaseline do as well?"

BRIDGET (to caller): "Miss Fitzpatrick is sorry, sor, but she has the toothache."

"I am very sorry. Is there anything I can do for her?"

"Oh, no, sor! she's just sent her tathe to the dentist."

PHOTOGRAPHY AND METEOROLOGY.

BY PROFESSOR A. L. COLTON, *U. S. Weather Bureau, Washington, D. C.*

(Continued.)

I HOPE I have sufficiently emphasized the necessity of absolute truthfulness in any photograph to be used for scientific work, and the absence of every form of alteration. I now wish to briefly mention some of the ways in which photography may be made useful to meteorology.

Tornadoes.—The preceding discussion naturally suggests the tornado as the first phenomenon to be considered. The laws of tornadoes are imperfectly understood, and are now the subject of much study, but excessive difficulties are in the way. I have heard a gentleman stoutly maintain that tornadoes have no gyratory motion, and that up to about 1872 no funnel cloud was ever represented in connection with them; that this appearance is wholly due to imagination. But this gentleman admits that he never saw a tornado. On the other hand, a great number of persons testify to having seen a more or less definite funnel-shaped cloud, and have drawn sketches to represent what they saw; and in the judgment of the best meteorologists nothing seems more definitely settled than that tornadoes are characterized by the rotary motion usually attributed to them.

As to photographing or observing a tornado in motion, the instinct of self-preservation naturally overcomes curiosity, scientific or otherwise, and an observer in the vicinity, even at a safe distance, would usually be so excited as to render his judgment unreliable. It is not surprising, then, that accounts from eye-witnesses of tornadoes are sometimes contradictory and untrustworthy.

Perhaps no person will ever be daring enough to stand his ground in close proximity to a tornado, but authentic photographs taken from just outside the danger line would afford the surest testimony in regard to the points in dispute. Photographs from *any* distance would, of course, be useful.

Tornadoes usually advance toward the northeast at the rate of about thirty miles an hour. The track of marked disturbance averages only half a mile, and the path of great destruction is often only a few hundred feet wide. The velocity of the wind diminishes more rapidly to the north of the path than to the south, so that for a person who finds himself directly in the path of an approaching tornado the nearest place of safety lies to the north or northwest. Men have stood without injury but a few hundred feet to the north of a tornado. If, then, the enterprising amateur photographer finds himself on reasonably safe ground outside the path of an approaching tornado, with time to arrange his camera, he can make a contribution of incalculable value to science.

Some use can also be made of photographs showing the disposition of the débris left by the tornado before it has been removed or disturbed in any way. A great deal of this work has, however, been done.

Clouds.—Some attention has been given, especially at the Kew Observatory, England, to the photography of clouds for the purpose of determining their height, direction of motion and velocity, and so studying the upper air currents. I have seen occasional references to the subject in American literature, but so far as I am aware no practical work of this kind has been done here. Some very interesting results might be obtained and the field is a good one for amateurs who care to make the somewhat elaborate preparation needed. Two

cameras are required at a definite distance from each other. If the measurements are to be accurate the distance must not be too short, and the exposure must be made at the same instant, the instruments having been pointed so as to cover the same region of the sky. The height and position of a cloud in the field of view can be found by determining its location on each plate, finding the altitude and azimuth of the axis of each lens and applying suitable trigonometrical formulas. The work is greatly simplified by placing the cameras at the same level and directing the axes of the lenses vertically, the angle of view included by the lenses and the distance between them being so chosen that the fields largely overlap. Similar lenses should be used, and the plates should be of the same size. From successive observations of the same cloud, taken at different times, the direction and rate of motion may be found.

Attempts have been made to measure the height, velocity and direction of motion of clouds by eye observations with theodolites or similar instruments, but the photographic method has decided advantages. In the case of eye observations by two parties at a distance from each other there are great difficulties in the way of agreeing upon the exact spot to be considered, and, while following it with instruments, in making the observations simultaneous; but with photographic plates corresponding objects may readily be compared. Even in using the photographic method some means of communication between the observers is essential. Telephones are preferable, but a code of flag signals may be arranged.

Simply photographing the clouds themselves is much easier, and cloud photographs present many features of interest. They aid in studying the typical forms of clouds and their progressive changes, and in the association of cloud forms with prevailing weather. Not only may they add to our knowledge of general types of clouds, but if the work could be sufficiently extended they would increase our knowledge of the local forms peculiar to different regions and climates. There are also types peculiar to single localities, and a collection of photographs of these would be of the greatest interest. Among these are the "table cloth" on Table Mountain; the clouds hanging over different volcanoes, etc.

As very actinic light is reflected from the blue background of sky, as well as from most clouds, this work is attended with some difficulties, especially in photographing cirrus clouds. Orthochromatic plates are, of course, useful. Advantage can also be taken of the fact that the light reflected from the blue sky is partly polarized. If, now, this light be extinguished, or dulled, by the analyzer of a polarizing apparatus, the image of the cloud will appear more distinctly in the photograph.

A good instrument for this purpose can be found in a plate of black glass, or obsidian. This method was described by Dr. Riggensbach, of Basle, in a paper read before the Royal Meteorological Society in November, 1888. I quote:

"If such a plate be held so that the plane which passes through the cloud, its reflected image, and the eye, is normal to the line from the observer to the sun, the mirror almost completely extinguishes the polarized light from the sky, and the reflected image of the cloud comes out sharp on a dark background. If, then, such an obsidian plate be fixed before the lens of a photographic camera, so that its plane is inclined at an angle of 33 degrees to the optical axis

of the lens, and the camera be placed so that the sun's rays shine perpendicularly on one of its sides, we then turn the whole apparatus round in the direction in which the sun lies, as an axis, until a cirrus cloud is visible in the camera. If now a sensitized plate be inserted, a picture of the cloud can be produced under the most favorable conditions possible.

"A still simpler mode of obtaining such cloud pictures is to use the surface of a lake as a polarizing mirror. The best clouds for such a purpose are those at sunrise or sunset, at an altitude of about 37 degrees, and in an azimuth either greater or less than that of the sun by 90 degrees."

Lightning.—There are many unsolved questions concerning the electrical phenomena of the atmosphere, and perhaps some of these can be brought nearer to a solution by the careful study of photographs of lightning flashes. Information may be obtained as to the length and breadth of the flashes, their position relatively to the earth's surface, their duration, their different varieties, and perhaps also the reasons for their sinuous path in space.

A considerable amount of work has already been done in photographing lightning, but the results only show the need of more. The Royal Meteorological Society has probably done the most systematic work in making its large collection of lightning photographs and in classifying into types the flashes represented. The classification includes six distinct types.

In the case of so transient a phenomenon as lightning, the sensitive plate is especially useful in preserving for deliberate examination the fugitive image of the flash. However, there are probably defects in the image, due to optical peculiarities of the lens and to reflection of the brilliant light by the back of the plate, and these somewhat add to the difficulties of the research. The reflection referred to can be partially or wholly obviated by using films instead of glass plates.

Of course the photographing of lightning can be done only at night. The camera must be focused for distant objects, and it will be found useful in a variety of ways to have the bed of the camera marked for this purpose. By directing the camera toward the region of the sky in which the flashes are observed, leaving the lens uncapped, and capping it immediately after a flash has appeared within the field of view, a photograph can be obtained. On very sensitive plates there may be a reversal of the image, especially if a very rapid lens be used. This "dark lightning" is likely to be invisible, as the background also is dark.

By determining in some manner the interval of time between the flash and the report, the distance of the flash can be found; from this distance, the focal length of the lens, and the length of the image on the plate, the length of the flash might be approximately determined.

It has been thought that the lightning discharge is oscillatory, and some experiments have been made which tend to confirm this view, by simply moving the camera with the hand at the time of the flash. The path of the lightning thus photographed has an oscillatory appearance. This is an interesting experiment and one not difficult to perform.

Frost.—Hoar frost presents a multitude of forms which are not only of interest to the meteorologist, but are exceedingly beautiful in themselves, and well worth the photographer's attention. Snow crystals also are both beautiful and interesting, and our knowledge of the processes of crystallization might be

advanced by a careful study of these forms in connection with the circumstances of temperature and humidity accompanying their origin. These crystals are so evanescent that it would be very desirable for purposes of study to preserve their forms by means of photography. Of course, they must be kept at a low temperature until after the photograph is taken. As they are so small some magnification would be useful. Hail storms also, their form, cross-section, etc., are excellent subjects to be included in this research.

There are also various optical phenomena of the atmosphere, which have rarely been photographed, owing partly, perhaps, to the infrequency of their occurrence. Of this class are the mirage, the rainbow and the solar halo. No favorable opportunity of photographing them should be allowed to pass unimproved.

CAMERA BELLows.—STEREOSCOPIC PICTURES.

BY G. W. PEARSON.

[Paper read before the Photographic Society of Kansas City.]

Mr. President and Gentlemen,—Our meetings of late have been rather dull as regards the bringing up of new subjects, and I thought I might edge in a few words without occupying too much valuable time.

I have two subjects, both, as you see, illustrated. First, the making of a camera bellows. In one of the English photographic annuals I saw an article on this subject which seemed so plain that, having some leisure, I was induced to try it, and the result is before you in a 10 x 10 bellows, which will open 18 inches, and is, I think, light-tight.

As the article I spoke of is probably not known to all of the club, I will give the gist of it in connection with the exhibit, and I specially ask you to reserve comment till I get through. First, it says make a box the size you want the outside of your bellows, the sides true and smooth, and one carefully squared, the length 6 or 8 inches longer than you want the bellows. For the bellows provide a piece of silesia 4 to 6 inches wider than the length of the bellows, and long enough to go around the box twice and a little for lap. A sheet of strong hardware wrapping paper half as large again as the cloth, and a dish of thin glue, complete the material required.

Process.—Wrap the silesia once around the box, joining the lap with glue; then cover this with glue and make a wrap with the paper (net). (I think it best to put the glue on the paper.) Cover the paper with glue, and go around again with the silesia. We now have our box smoothly covered with two thicknesses of cloth and one of paper, and let it dry in this shape, which brings me to the first bone I have to pick with the writer of the article referred to.

He says: "Mark the partitions of the outside folds carefully around the box on the cloth, then slip the cloth along till the first mark is exactly over the end of the box." But he doesn't tell us how to slip it. The box, as you see, is fair and smooth, and I made sure that there was no adhesion anywhere, but the cover could not be induced to move. So I split one side of the box diagonally, the wood being fortunately straight enough to admit doing it. This enabled me to bring the sides together a little, and made the movement easy. Then, before folding, press the box back to place, and it will be all firm, repeating for each fold, and, for greater security, tacking for the last one or two to insure that the cover doesn't slip on the box during the folding.

Operation of folding.—The writer referred to says use a spoon handle for a tool. I used a screw-driver, which, taking care that it has no sharp corners, I think is better. Take a bellows to look at and notice how the folds are adjusted at the corners. Then first with the handle of the screw-driver rub the cloth over the end of the box, forming a sharp, well defined angle ; slip and cover along one fold and repeat ; now commence at the top of the box and fold the cover evenly, thus defining the inner fold and partly arranging the folds of the two top corners ; follow with the sides and finish with the bottom. After going once around, the bellows is ready to come to place properly, and by going over it the second time the folds can be made more uniform than by putting them clear down (as I did most of this) by going once around.

You will notice that this box has no stiffening pieces ; these are not referred to in the article quoted. If used the work would need to be laid out on the paper and these pieces glued to it before the outer cover is put on ; but we haven't got to this refinement yet, and when we do we will be more likely to get it at the dealer's than at home.

Now you have the subject illustrated, and have been ready for some time with your comments. But hold on a minute ; there are places where the glue failed to make good bond between the cloth and paper, and the folds are rough and uneven, and the whole thing looks as if it were ten years old. So it is, and was before I commenced it.

Do you suppose that I was going to spend time and money both on such a first experiment ? Not much. The cloth is an old piece which my wife allowed me to take from a waste basket, the paper came around something which left more corners in it than there are now, and the outside was taken in like manner from an old worn-out gossamer waterproof ; the whole expense being two or three cents' worth of glue, and I let that get too cold and made a careless job of putting it together. I did not get much of a bellows, but I did get some experience. As you see, I did not take pains, for I used material which was next to worthless and did not expect even as good a bellows as I got. It may be of use with an enlarging camera, but none of us would care to see it attached to any of the polished mahogany cameras which stand around us. To make a good bellows, take good material and take pains and you will have it. A further lesson to be learned from this is that of cost. Good material for such a bellows (cloth) will cost perhaps forty cents ; with rubber outside perhaps twice as much, and with leather it may be three times. Add to this anywhere from half a day to a day of time and you have about what it will cost you to make such a bellows, and the dealers can well afford to sell at such prices, for their experience and facilities enable them to do the work so much cheaper as well as better than we can, as to afford a good profit at prices indicated in this manner. The same is true of many other things, which from the difficulty of procuring or cost we are tempted to try to make for ourselves. I expected more leisure when I made this, but that suddenly came to an end, and I do not think the dealers will suffer much from my competition.

STEREOSCOPIC VIEWS.

My next subject is entirely different, relating to stereoscopic views. To illustrate this I took from my collection of several hundred such views a handful at random, and picked out a few in which the distance between similar points in

the middle distance of the picture was less than $2\frac{7}{8}$ inches, and a few others in which similar points were over three inches apart, marking on each this distance in pencil as a convenience in observation. As you see, these cards are gathered from a variety of sources, all the way from Paris to the Rocky Mountains, and are all from regular makers, no amateur work being considered in this, as I wish to show what I think is responsible for the decadence in this branch of photography.

You will notice that some of these cards are less than $2\frac{1}{2}$ inches between like visual points and some are over $3\frac{1}{4}$ inches between like points, and I claim that the decadence in this work, which has been considerably spoken of lately, but not explained, is directly the fault of the very persons whose business has been lost or injured by it. They have ignored one of the simplest and most absolute principles of optics.

The pupils of the human eye, when looking at a distant object, are generally about $2\frac{5}{8}$ inches apart. Nature provides for their approaching each other as for viewing near objects, naturally and unconsciously, but any divergence outside of parallelism is unnatural and painful, if not altogether impossible.

The photographer aiming to give as large a picture as possible has followed no fixed rule as to distance between similar points on his picture, as the picture shown illustrates. Finding it impracticable to see such pictures with ordinary lenses, the optician has come to his aid with prismatic lenses, which certainly allow the eye to bring such pictures together; but whoever may explain it, or however it may be explained, the fact remains that to look at such pictures, that is, those which are too widely separate, soon tires the eyes, while with those which are $2\frac{3}{4}$ inches or less between like points the eye assimilates them easily and without fatigue. Look at the first series in which the pictures approximate this distance or less, and when you have looked them over, take up the next series in which this distance is greater, and I think you will find, at least some of you, that when you are done with them your eyes will have the same feeling as if you had been laboriously endeavoring to make out some far distant object.

It is not sufficient for the good of this class of work that some photographer shall make correct pictures and that some one optician shall make lenses fit to see them with. Both pictures and lenses should be made to some well studied and agreed standard. My idea is that similar points in middle distances should never be more than $2\frac{3}{4}$ inches apart, and $2\frac{5}{8}$ inches would be a standard not to be departed from more than one-eighth of an inch either way. I do not dispute the ability of opticians to make it possible to see pictures much further apart, but I claim that for the million who want many millions of these pictures, a move in this direction by adopting a standard of this kind and living up to it would furnish the pictures they want, and the profession a new start in this line of work to the advantage of maker and user alike.

ON ENLARGING FROM SMALL NEGATIVES.

BY MR. W. I. CHADWICK.*

(Continued.)

Now a word or two about the lens, or objective, as it is called. Almost any moderately good portrait lens or rapid rectilinear which will cover a plate as large as the negative to be enlarged from, will answer the purpose; the focus of it has very little to

* Before the Stereoscopic Club.

do with it, but if too short, the marginal definition would be deficient, and wide angle lenses with small diaphragms are the most unsuitable. If a landscape lens be used, the convex side should be next to the negative, with the diaphragm in front. When enlarging from a quarter plate negative a quarter plate portrait lens will be the best, and from a half plate negative a half plate or cabinet portrait lens is as good as any. Of course, a rack and pinion focusing arrangement is usually provided on such lenses, which is a convenience, but not absolutely necessary. Now the objective negative condenser and light must be contained in something, and no better form has been devised than that of a magic lantern; it matters not for external shape or appearances, so long as all the parts are kept in position and the body light-proof. I have before now constructed such a lantern from a soap box, and two Australian meat tins for draw tubes and to carry the objective.

The easel on which to attach the sensitive paper may be contrived as is most convenient; a flat drawing board with drawing pins is as good as any, and this may be supported against a wall; but the one now on the table possesses many advantages, as you see it is portable and can be stowed away in a small space; it is self-supporting, and always at right angles to the table on which it stands, and three rubber toes on which it stands prevent slipping and rocking. The board to which the paper is attached is removable, and can be replaced in its exact position in an instant by means of vertical grooves; it is also provided with a vertical adjustment above and below the center.

Very little information can be given for the exposure, as the conditions are so variable, and the different brands of paper in the market also vary in rapidity. It is usual to make a trial exposure from some average portion of the projected image, and on developing it will be seen if too long or too short an exposure has been given; but with a little experience, keeping to one brand of paper and one method of developing, the trial exposure will not always be resorted to.

The developing trays generally used for this purpose are those with glass bottoms and wooden sides, and are very convenient for small sizes when kept clean, one for each solution, and they should be frequently varnished. But I have frequently made big enlargements without these large trays by folding the sides of the paper to form a tray in themselves. American wooden clips are handy to hold the corners, while a drawing board about 4 inches larger each way than the paper forms a capital support, and can be easily handled; and it is by this "dodge" I shall attempt to make a few enlargements to-night.

The development of bromide paper may be conducted by pyrogallie acid, hydroquinone, eikonogen or ferrous oxalate; and, after considerable experience with various formulæ, I feel bound to confess that nothing has succeeded in my hands so well as ferrous oxalate. It has been recommended to make up two saturated solutions, one of oxalate of potash and the other of sulphate of iron; but saturated solutions are not definite enough—they alter with change of temperature—and if the two solutions be mixed in certain proportions at one temperature, they are not in the proportion mixed at another temperature. The solutions made up as follows are much to be preferred:

OXALATE SOLUTION.

| | |
|--|------------|
| Neutral oxalate of potash..... | 1 pound. |
| Water..... | 50 ounces. |
| Made to turn blue litmus paper slightly red by sulphuric acid. | |

IRON SOLUTION.

| | |
|-----------------------|----------------------|
| Sulphate of iron..... | $\frac{1}{2}$ pound. |
| Water..... | 15 ounces. |
| Sulphuric acid..... | 15 drops. |

BROMIDE SOLUTION.

| | |
|---------------------------|------------|
| Bromide of potassium..... | 1 dram. |
| Water..... | 10 ounces. |

CLEARING SOLUTION.

| | |
|------------------|------------|
| Acetic acid..... | 1 dram. |
| Water..... | 36 ounces. |
| Alum..... | 6 drams. |

FIXING SOLUTION.

| | |
|---------------------------|-----------|
| Hyposulphite of soda..... | 3 ounces. |
| Water..... | 20 “ |

After exposure, flood the paper with water, and rub it gently by a pledget of cotton wool; then place the cotton wool into a clean saucer kept for the purpose. Drain the paper and apply the developer. A good normal developer will be:

| | |
|-----------------------|----------|
| Oxalate solution..... | 6 parts. |
| Iron solution..... | 1 part. |

(The iron should be added to the oxalate, not the oxalate to the iron, or a precipitate may form.)

But, as has been stated, the ferrous oxalate developer is capable of some modification. A smaller proportion of iron will produce softness, and thus, for developing prints from hard negative, showing great contrast, the proportions may be as much as 12 of oxalate to 1 of iron. On the other hand, a large proportion of iron produces contrasts; bromide also assists in producing vigorous prints, but it must be very sparingly used—often a single drop of the solution mentioned per ounce of developer is sufficient, but there is a limit to the larger proportion of iron; 3 parts of oxalate will not take up more than 1 part of iron; after that a precipitate forms, which is injurious to the prints.

Like other processes in photography, over-exposure produces softness, under-exposure produces hardness. The developer may be assisted over the surface of the paper by a pledget of cotton wool, which, when done with, should be placed in another clean saucer for future use. If the picture flashes out too quickly, it is a sign of over-exposure, and will, in all probability, come out flat; the slower the development—other things equal—the greater the contrast. Increase of temperature hastens development. Rocking the print during development, or pouring off and on the developer, thereby allowing air to get to the print, often very much improves the color—it gives brilliance. Local development is often resorted to, and may be applied with a soft camel-hair brush or a Blanchard brush. As soon as development is complete (which should be stopped before becoming too dark, as the vigor increases in the fixing), flood the paper with the clearing solution, without washing, and allow this clearing solution to remain on for a few minutes, then change it for another dose. The object of this very dilute acid solution is to prevent the iron precipitating in the pores of the paper, and thus staining, which would show most in the high lights being yellow instead of white. Now the print may be washed in water a few times, and fixed for ten or fifteen minutes in the hyposulphite solution, which should be made fresh and not used too often; and, after a thorough washing for three or four hours in frequent changes of water, it may be hung up to dry and mounted in the usual way.

If, after fixing and washing, any discoloration appears, such as degraded whites or a uniform yellowness, it is a sign of insufficient clearing after development (and as this solution is cheap enough, it should be freely used). However, if the hypo has been thoroughly eliminated, it may be flooded with a final clearing solution composed of—

| | |
|---------------------|----------------------|
| Sulphuric acid..... | $\frac{1}{2}$ ounce. |
| Water..... | 40 ounces. |

and allowed to remain for at least ten minutes and again thoroughly washed.

The best results are only to be obtained from perfect negatives, correctly exposed and developed. And finally it must be remembered that the slightest trace of hypo,

either from dirty fingers or dirty dishes, getting to the developer, will cause stains which nothing will remove.

Mr. Chadwick then proceeded to give a practical demonstration, using a lantern with 5½-inch condensers and a three-wick oil lamp, the exposure being two and a half minutes. No trays or dishes were used, but the paper on which the enlargement was made was folded at the edges to form its own tray; after development and fixing had been completed, the enlargement was passed round among the members, and it was universally admired.

A member remarked that the negative from which the enlargement had been made was a very beautiful one, and exquisitely suitable for enlarging from; to which Mr. Chadwick replied he had had nothing to do with its selection. There was a box of negatives in the room, and if the members would like to see the demonstration repeated, he would be glad if another negative was selected.

The worst negative was then handed to Mr. Chadwick, and to this an exposure of eight minutes was given, during which time, however, a portion of the foreground was covered. After development, the result was declared to be even better than the first one. Fry's roughest paper, Naturalistic brand, was used in the second demonstration.

A HINT WORTH TAKING.

Dear Editors:

The BULLETIN is just at hand. I notice the question by F. W. T. and your answer. Having been helped by the BULLETIN heretofore very much and feeling sure you have not struck the root of his trouble I write you this. I was bothered in the same way some ten years since. Wrote asking the BULLETIN for help and received very nearly the same answer. But I wasn't helped by it. After a good deal of bother, I found I was heating my iron upon which I sat my ammonia in the fuming box too hot. The result was the ammonia attacked the surface and eat it into a rotten condition. I feel quite sure this is F. W. T.'s trouble. I have seen two or three cases of it among my photographic friends. It is always more likely to happen in cold weather.

If you can reach the inquirer I am sure this will help him out of his trouble.

Yours respectfully,

W. MILLIKEN.

OUR ILLUSTRATION.

THE heliotype frontispiece that forms the illustration to this issue of the BULLETIN is from one of a series of handsome prints made by Mr. H. W. Gridley during his travels in the East. There is probably no more energetic and enthusiastic worker in the ranks of amateur photography than Mr. Gridley, and we are always glad to get the opportunity of reproducing some of the valuable work that has cost him so many years of hard travel and expense. We do this, too, because the work is of the highest grade in photography, and is truly artistic.

The picture that we present to our readers was copied from a photograph, and is somewhat smaller than the original print. As the reproduction is very perfect, it is at once an evidence of the beauty of the original negative work, as well as the faithfulness of the heliotype printing process. As a matter of interest, Mr. Gridley tells us that the object perched upon the crescent surmounting the dome is a wild bird that settled there just as the exposure was made, and this is a good evidence of the accuracy of the lens when used by a careful worker.

AMERICAN INSTITUTE—PHOTOGRAPHIC SECTION—ANNUAL DINNER.

(Continued.)

The *President*—I want to call upon a gentleman who is present, and as a preface to the call I would say that the American Institute has in the neighborhood of three thousand members, that every member of the American Institute can elect himself a member of any section, and that in the Photographic Section of the American Institute no distinction is made between the professional and the amateur. We have amateur organizations and we have the President of one of these flourishing societies here, and I would suggest as a sentiment amateur photographic organizations, and call upon Mr. David Williams, President of the New York Camera Club.

Mr. DAVID WILLIAMS—This art of ours, like every other art of these days, is dividing itself into specialties. Our President has said that after Daguerre and Niepce, almost all the advancement in the art has been by amateurs. What in the world do you call those two men? There were no professional photographers before photography existed, and I am here to proclaim them as the first and leading amateurs.

In one of the books I have read, the author says: He believed that the fisherman was thrown by the nature of his calling, passing lone nights under the stars on the Sea of Galilee, into a closer relation with nature and nature's God than other men. Here among ourselves, where no scoffing outsider may ridicule the idea, I must confess to sometimes having had a feeling akin to that. The photographer photographing beautiful scenes of nature for his own pleasure with the ambition of producing as nearly as possible the truth, is thrown into relations with nature such as no other man is. The artist, with his colors, is able himself to work out from his own consciousness of things a different picture from what he finds. But the photographer is placed under the necessity of finding, adapting and combining the elements of beauty and then by technical proceedings of his art develops them into a picture. He must take nature as he finds her; he must study her, and I think that a photographer is very much closer to nature than a person who looks upon it for his own amusement or in the ordinary course of life. In my experience, and I have traveled before I knew anything about photography, and a good deal since,

since I have been a photographic crank I have never traveled without a camera, I have taken a great many pictures of a great many places. Of all the places I have seen I have no clear picture in my mind except of those scenes of which I took a photograph. It does not make much difference whether the photograph was successful or not, but the operation of taking it impressed it upon my mind in such a way that those are living pictures before me to-day, and whenever I see a little 4 x 5 picture, a snap shot, of a scene, I can see the people standing out before me almost as clearly as I see you now. I can go back over a journey. I can remember the conversation, and all the incidents of the occasion.

I think we may claim that a picture taken by photographic art, if it has the artistic quality, which I claim to be entirely possible, is in every respect as artistic as a picture by any other process, and surely a picture which has as its basis fidelity and truth, if it has other artistic qualities, is better than a picture which produces its effect by mere generalities.

There is one little article that I love and I think only one mere article without life, and that is my first lens. I bought a Dallmeyer lens about seven years ago. That lens has been with me almost everywhere and has become almost part of myself. I have certain attachments built upon it which are the result of my own ideas. I applied them, and as it is now it is a little different from anybody else's. It has been with me in more places than any one thing, has seen more of the things which I have taken pleasure in seeing, and whatever it saw it saw true and sometimes it has resulted in making a true image of what it saw. My experience in that is similar to that of all other photographers. We all have our favorite lenses, all have lenses, other things being equal, that we prefer to take pictures with than any other. It is a matter of sentiment. The appliances which are on my lens are not as good as I could now have put on it, but still the force of association and the love which has sprung up between us remains.

The organization of amateurs is going on at a very rapid rate. Every day, or at least twice a week, a new society is formed, a new circle for the development of this art of ours, to the advancement of which we are all lending our energies.

The *President* then called on Mr. W. E. Partridge to talk about printing processes.

Mr. PARTRIDGE—Mr. President and Gentlemen: I suppose that the subject was selected

because I am peculiarly sore on printing and printing papers. I belong to the young corps of amateurs, but I am the oldest of them. I do not know of anybody that commenced as soon as I did with dry plates who bought his gelatine dry plates. They were not in the New York market generally when I commenced. The first thing I did was to get Mr. Henry T. Anthony to make a large album for me. I put in it samples of almost everything I did. Some of those samples now are about twelve years old. Some of my bromides lasted for eight years in beautiful condition and then in the course of eight to ten months the image was obliterated entirely. Then I naturally tried other processes of printing. In fact, my first process was the one I believe Hershell invented, blue prints, and with the exception of some platins, they are the only prints that have stood the test of time from the beginning to now. All of the albumen silver prints, with a few curious exceptions, have faded or begun to fade. I have one by Carlo Ponti, of Florence, which does not show any sign of discoloration, but several others made by him which after six years in the album were perfect, have begun to discolor within a few months. Now, among my silver prints, I have had different batches washed anywhere from one to forty-eight hours and it has not made any difference in their permanence. They have gone in at the edges, turned yellow, lost their high lights and their beauty. I have also had a grudge against them all because, no matter who makes them, no matter where they come from, washed two hours or twenty-four, the whites are far from being what a white in a picture should be.

They are very deeply tinted when compared with white paper, and in that respect none of the later processes have equaled the blue print; the purity of the whites there is absolute, it is white paper. There have recently a number of new things come up and I have tried them carefully, among others the collodion emulsion, and some of the prints promised to stand. I coated the papers myself and had strong hope, but unfortunately a year's experience has disappointed me. The toning processes have not suited me because of this deep tinting of the high lights; they did not give the purity of artistic effect that ought to be. Printing deeply to get good tones so reduces all the high lights that the beauty of a picture is gone when you are ready to mount it, and after it is mounted it proceeds to actual discoloration. I even went so far at one time, as a matter of spite, as to mount a half dozen

of albumen prints with common flour paste preserved with bichloride of mercury, and I do not think they are fading any worse than some of the others that were done according to the rules and regulations. I knew what I was doing, and I expected to see them fade in at least six weeks. They are now five years old and they seem to be holding their own very well.

When the American "Aristo" paper came out I was a great deal impressed with it, but as Prof. Ehrmann was saying during the dinner, I found at first a good many troubles. There were "cussednesses," if you please. It would curl, sometimes it would peel, and when I attempted to make it myself, sometimes the emulsion would not flow and sometimes it blistered. After mounting it turned white in fuzzy spots. The use of a solution for making the prints stay flat was an unmitigated nuisance. Altogether, while the process promised well, there were so many disagreeable and unmanageable features about it as to make it too troublesome, for me at least. The other day I saw something in the way of manipulation that puts the whole process of using Aristo paper in an entirely new light. I think perhaps it may be new to some of you, as it has been but recently introduced. Theoretically the Aristo paper should be permanent. In this respect it answers our requirements, for it is a collodio-chloride image in a collodion film. I think Mr. Newton will testify to the permanence of a silver image properly fixed and washed when carried in a collodion film. In our wet negatives such an image has shown great permanence. The silver of the Aristo paper is carried by the film alone. It does not go beneath the surface into that heterogeneous substance we call paper, nor does it form an unstable albumen compound. It has an additional advantage of being in an extremely thin film. But the most important matter was to handle the paper so that it would not twist itself into solid rods or form tubes that could not be unrolled. Some one conceived the idea that the best way to get rid of the "cussedness" was not to allow it to begin. He proposed to keep the prints flat from the time they left the printing frame until they were finished, and the method was simply to wet the bottom of the tray and stick the prints down, and then stick others on top of these, as if to make a pile for pasting. The quantity is not material, there may be one print or a hundred. The other day, while experimenting, I saw a gentleman put seven hundred prints in a tray

thirty inches square. It might have been a thousand quite as readily. Just enough water was sprayed over the mass to keep them flat and in place.

The next point was, of course, to wash the free silver from them. The property of hot water to dissolve silver nitrate with great rapidity can here be employed, for neither the film nor the paper is injured by the heat. Water of the temperature of about 110 degrees Fahr. is employed, and is poured into one corner of the tray so as not to fall directly upon the prints. The quantity must be sufficient to nearly or quite cover them. No harm is done if there is a little more. The tray is rocked, and the water penetrates all parts of the pile, even though the number of prints be as large as that I have mentioned. The tendency to curl makes the prints rise slightly, so that the water has practically free access to the mass. In less than five minutes the water becomes milky. Then the prints are pressed down with the hand while the tray is inclined and the water is poured off. In the experiment I have mentioned the hot water bath was continued for five minutes and then poured off. It was repeated five times and in about twenty-five minutes the water ceased to show silver in any appreciable quantity. Seven hundred prints had gone through the washing process without further handling than that necessary to put them in the tray. It had not been necessary to touch a print during the washing, and there was no curling.

To one who has been accustomed to the methods of washing employed in large establishments, with the handling, the tearing and folding which is almost unavoidable, that was a revelation. There were no long and bulky tanks, the ordinary tanks of the establishment seemed to have suddenly grown several times too large for the work on hand.

From the washing tray the prints go to the toning bath in the usual manner. Any bath will answer, but it should be so arranged as to give the desired tone in not less than six or eight minutes. Here I cannot speak with certainty, but I think that but half the quantity of gold needed for albumen prints is needed for a given number of the Aristos. If this is the case, it may be accounted for by the fact that the image is in a thin film and upon the very surface of the paper. And to this latter fact is due the weakness of the fixing bath, which is 1 to 20. The prints fix in about the usual time. The toning bath is followed by a wash in cold water, made decidedly acid with acetic acid. After the washing, which should be with frequent changes or

running water, the mounting should be done at once and without allowing the prints to dry. Drying is not a good thing to come in as an intermediate process, because if the paper once has a chance to swell and curl, the film is not strong enough to bring the paper back, and all the unfortunate results of curling are sure to follow.

The resulting picture is in many ways eminently satisfactory to my artistic sense. In printing the image does not seem to have its high lights so deeply tinted as is necessary with the ordinary albumen print. The high lights of the finished picture may be made absolutely white paper. What this means may be seen by taking any photograph and comparing its highest light with a bit of white paper. The surface of the Aristo prints is brilliant even before burnishing. This is highly desirable, and this, in addition to the fact that the image is on the surface of paper, produces a result decidedly superior to the best albumen prints.

Many artists object to glaze and say that pictures ought to have a matt surface. In this they are partly correct if the picture is large. But for a size of five-eighths and less, the artist usually varnishes his picture and puts a glass over it. In photography we are right in following his example and giving our small pictures a glazed surface.

The Aristo paper has many advantages over any process with which I have so far experimented. The picture before washing and toning is sharper and clearer than is obtained in any other paper process. The high lights are as white and clear as those of a fine blue print, while the details are like those of a glass positive. The surface obtained by burnishing is almost a glacé. Even when mounted without burnishing there is a high gloss, though not quite equal perhaps to burnished albumen paper.

Part of the advantages arise from the fact that the film when applied contains its proper quantity of silver. It does not come in contact with the paper, but is supported upon a separate and independent substratum. Lastly, the image is without a blur because of the thinness of the film itself.

If there are no unforeseen drawbacks, this process is one which many of us have been looking for. If it is permanent, it is beyond all praise. Since the wet collodion image has proved itself permanent and as this film bears to the paper the same relation which that did to the glass, I think, gentlemen, we have strong grounds for hoping for the best.

The *President* then called on Mr. C. Van

Brunt to tell what lessons we learn from amateur photographers.

Mr. VAN BRUNT.—I do not know what lessons we learn, but there are a great many we would like to learn. Mr. Rutter tells us we could sit very quietly and take a trip all over the world and do that through photography by looking through lantern slides. I do not find photography an exact science. I never yet succeeded in definitely making sure that I am going to make a good slide.

The most interesting subject in which an amateur can dabble is slide making, and I certainly wish that I could find some royal road or some machine to make a lantern slide perfectly.

I have very little to say and close my remarks here.

The *President* then called upon Mr. T. C. Roche to speak on photo-mechanical printing.

Mr. T. C. ROCHE—In regard to photography in connection with the printing press, we are dependent on the first discovery of M. Poitevin, of Paris. He was the first to use commercially bichromate of potash in a solution of gelatine. Paper was coated with this solution, and when dry exposed, in contact with a photographic negative, to light; then inked up with transfer ink, afterward soaked in water, then the ink removed with a soft sponge. Where the light had acted the coating was insoluble and retained the ink. Where the light had not acted the ink was removed quite readily, leaving a clean proof, which was transferred to the lithographic stone and etched in the usual way. Now, in place of printing on transfer paper, they coat and print direct on copper or zinc plates. Those are etched in relief and can be used in the ordinary steam press the same as type. This has been found perfect for ordinary line work. Still there was a demand for finer work, work that would give true copies of wash drawings or regular photographs, or what is now called half tone, suitable to set up with type. This is now an accomplished fact. You have a special kit in your plate holder. On one side, next to the lens, is placed a glass with an opaque ground on which has been ruled fine cross lines about 120 or 130 to the inch. This is held in position by two brass clamps. On the other side of the kit you place your sensitive plate. You focus in the ordinary manner and give about double the exposure. On developing, you will find your negative broken up into minute dots and lines. The finer your ruling the more detail you get. This

negative now is used in the usual manner for printing on Syrian asphalt, or bichromated albumen, or gelatine, then etched or electrotyped for the press. In this way our magazines and illustrated papers are now produced, doing away to a great extent with the artist and the wood engraver.

I do not refer to the photo-mechanical printing which gives gradation equal to the finest silver prints, or to photo-gravure, as those cannot be used typographically.

The *President*—We have heard a great deal about photography from a scientific point of view, and I am now going to call upon a gentleman who knows something of photography from a commercial point, Colonel Wilcox.

Colonel WILCOX—Mr. President and Gentlemen: The inference I have drawn since I have been sitting at this table is this, that the guests are very much like the Bland Silver Bill in Congress, liable to be called up at any time. There is a great deal to be said commercially of what photographers use in the production of photographs. It takes in almost everything in the vegetable, animal and mineral kingdoms, as well as the inventions, which seem innumerable. If you look over our inventory of about forty pages of chemicals, you would see that almost everything that could be thought of is used in photography, and if I should go through with them all you would think like the bummers who followed General Sherman on his march from Atlanta to the Sea. While his army was crossing one of those broad Southern rivers, one bummer said to the other: "I'll be blown if I don't think we have got into this lengthwise."

I will briefly state a few things about my experience in the business. I am quite young in the business, only twenty-nine years since I first commenced dealing in photographic materials, and the house which I represent is well known to you all. My partners, Messrs. E. Anthony and H. T. Anthony, who have since died, were the pioneers in the business, which they commenced over fifty years ago, and I must tell you of a story that Mr. E. Anthony told me many times about his first experience in photography, when he and his brother were engineers upon the Croton Aqueduct. They made a camera of a cigar box and used a spectacle glass for a lens, and one would sit beside the barn that was whitewashed, in the sun, and when the eyes became tired they would shut them, and when the ladies passed they would wrap their dresses close around them, as they said they had been

told they stood on their heads in the camera. Recounting the improvements in apparatus as it is at the present day would be tedious. We all are acquainted with the beautiful apparatus now manufactured, which is an ornament to any parlor; but from the time of the commencement of photography the improvements in apparatus for making pictures is marvelous, to say nothing about the various things accompanying it, to its present position. When I first went into the house of which I am now President, photographers were just in the full bloom of making ambrotypes. We had passed the time of Daguerre and gone into ambrotypes, using black glass and cases. There was no end to the cases and kinds. I was placed at the counter to sell cases, and there were so many sizes and so many kinds it was impossible to keep them in mind. There were the XXX, XX, X, S. V. X., C. V. X., leather bound, imitation leather bound, oval and square S. V. cases, Union cases of all different sizes and others too numerous to mention. Then the ferrotypes and envelopes of various descriptions. Then came up making pictures on paper, and I remember Mr. H. T. Anthony and Mr. Newton used to have long and interesting arguments over colodion paper and developing plates. There was nothing one could think of in the vegetable kingdom that they had not tried, even tea, tannin and coffee. All kinds of developers were used; some used acid, some one thing and some another. At one of the Annual Conventions of the National Photographic Association, Mr. Black, of Boston, was an advocate of the acid bath, and Mr. Klauber, of Louisville, was called upon to give his experience, and he said he was acid from the top of his head to the sole of his foot.

Every photographer has his hobby; one will use one kind of paper, but put a stamp on it and give him this same paper, and he cannot use it and will say it is not good for anything. One time we manufactured the E. A. Albumen paper, used almost exclusively through the country. There were some parties in Boston who thought they would get up something of their own; so we plated the paper, cut it down a little and called it Swiss paper, adding ten dollars to the price of a ream, and it was considered by many the best paper in the world and we could not sell the E. A. paper. But it was one and the same thing, except the stamp and plating.

There are some things which photographers recommend and insist are the best. They get a notion and you cannot move them; they are

jealous of their experience. I was very glad to hear Mr. Williams speak of the Dallmeyer lens. About thirty years ago Mr. Anthony was in Europe and saw Mr. Dallmeyer, who insisted upon his being agent for the Dallmeyer lens in the United States. We have sold the lenses from that time to this. The first lens that was used in New York City, to my knowledge, was one I took up to Mr. J. Gurney. I asked him to take the 3 B Dallmeyer lens and use it. He said he had enough lenses. I left it with him, however, and after about a month I went to Mr. Gurney's and asked him if he did not want the lens. He said he did not want it; he did not see but that his lenses were just as good. Mr. Frank Pearsall was his operator then. There was a well-hole in the center of the building, and he overheard the conversation between Mr. Gurney and myself, and he put his head over the well-hole and said, "If you let that lens go I will go." The lens stayed, and from that day to this it has been the favorite with first-class photographers throughout the country; not only this, but scientific men, men in the employ of the Government, have used the Dallmeyer lens more than any other. It is a lens you can rely upon every time. Mr. Williams also spoke of improvements on the lens. I do not know what his improvements are, but Mr. Dallmeyer is making some. One is called a telescopic photographic lens. A description will be found in Anthony's BULLETIN. The improvements that are made in photographic apparatus and the patents obtained, bewilder a man dealing in the goods. The innumerable kinds of shutters on the market and developers multiply constantly and their number is legion. It is astonishing when we think of it, and all of them are the best. Take the camera box: To see one that we used to sell when I first went into the business, you would scarcely know it was for the same purpose. Then take camera stands. We will have one said to be the best that ever was; another make a little different comes in and takes its place, then another comes in, and so they are constantly changing.

There was one remark made by Mr. Newton about the new things that come up. Dr. Elliott will confirm what I say about this. A man (from Chicago, of course) came in and wanted to know the manufacturer of the best dry plates, one who could manufacture in large quantities, have them uniform and to be relied upon. He said that he had just been allowed a patent here, and wanted to take out

other patents on the other side ; he was not ready to sell it or to put it on the market or to say anything about it. With all this color business that Dr. Elliott and Prof. Ehrmann have gone through with this evening, I think that we are nearly color blind ; but this is all going to be revealed in this plate. We can photograph colors with this new arrangement that has been invented. Of course, I have never seen it. It is to me like the boy up in Connecticut that I heard of : He went into the woods one day and came home and said he had seen one hundred rabbits and they had tails as long as his arm. His father doubted him and said that he did not believe that he even saw one, and then he said, "anyway I had a glimpse of one."

So we have a glimpse of photographing in colors, and it may be that in this new patent which he has taken out he has gone one step farther in getting an additional mystery solved, and if this is really so it is not necessary for us to go very much farther in guessing the way to photograph colors. Like the Irishman who did not know what this dynamite was made of that they had to blast with, but said it was mighty powerful, so we shall conclude that this new thing will be a mighty powerful thing if we get it and we will not care to investigate what the color is or what curve or plane, or what is reflected, as long as the results are obtained.

The President—We shall now be glad to hear about photography as applied to medicine and I will call on Dr. R. W. Wilcox to respond.

Dr. WILCOX—*Mr. President* : It is with a great deal of pleasure, and at the same time a certain disappointment, that I have come here to-night, for I remember very well the pleasant occasions when I have been a guest of the Photographic Section of the American Institute. For the past seven or eight years, whenever there has been any new invention in the line of photography I have always read the commendations and then laid my papers aside, knowing that within a few weeks, at the most, we would have an article from the vigorous pen of Mr. Partridge, in which all the faults of the material and the accidents that could possibly arise would be described, and now that he has found that American Aristo paper is easily worked, that it is perfectly uniform and reliable, that he is able with it to get results that are both artistic and beautiful, I feel that the millennium has certainly arrived, and the disappointment of to-night lies in the fact that I shall not again read any of his jeremiads on

the subject of photographic paper, at least in the journals. I earnestly advise him to commence now with a series of albums for the delight of his great-grandchildren, because with all the other good qualities of the American Aristo paper we are quite certain that the results will be absolutely permanent.

Your President has introduced me to speak upon the subject of photography in medicine. I am quite sure that he has no intention that I shall speak upon the subject of medicine here to-night, for during the past eight years at the New York Post-graduate Medical School I have delivered annually about eighty lectures upon my department of medicine, and I have by no means begun to exhaust the subject. Should I begin upon that subject I should be like the country shoemaker : This happened in New England, where lived a man whose employment was building vessels for the coasting trade. Noted for a great many other qualities, he was especially remarkable for the size of his feet. The story goes, that whenever in the consignments of shoes that came to the town some stray pairs of extraordinary size were found, they were always saved for this ship-builder, and when on occasion the supply of large shoes ran low he had been known to make use of the shoe boxes until he could purchase a new supply. The story goes on, that riding along one spring day he passed a small cobbler's shop by the roadside, and stopping, requested the cobbler to make him a pair of shoes. "I cannot do it, sir," the cobbler said. "Why not?" asked our man. "Because, sir, I am not well enough to work out-of-doors." So we will not attack the medical side of the problem to-night. Even if I am to talk on the subject of photography, as I am known to many of you as an amateur, I do not feel that I need an introduction, for I am not in the position of the wife of the ship-builder just mentioned. This man's wife having died, and being something of the opinion of the President of the Camera Club, preferring one forty to two twenties, he married a spinster from an adjoining town. His neighbors were very much disgusted with his conduct for two reasons; in the first place, they thought he did not show proper respect for his wife's memory, since his marriage followed precipitately upon the funeral; and secondly, they thought he failed to appreciate the home talent, so they left the new wife severely alone. He was busy with his occupation all day, and she, a stranger in the town, found time to hang pretty heavily on her hands, so at last when it became unbear-

able she complained to her husband. He assured her that he could remedy matters, and he set out for his next door neighbor. On telling her of the difficulties of his wife, he requested her to take his wife out and introduce her to the neighbors, and ended up his appeal by saying, "I am very sorry to be obliged to ask you to do it; if my first wife was alive she would do it in a minute."

Now there is a certain resemblance between the practice of photography and the practice of the profession of medicine, though at first sight it may not be quite apparent. We both use to a considerable extent the same substances. The bromides are restrainers in medicine precisely as they are restrainers in photography. We work in the same departments of physical science, in chemistry and in physics. Our processes differ somewhat. Mr. Mason in doing his work at Bellevue Hospital does only part of it in the dark. My work in the wards of the hospital is sometimes entirely in the dark. So far as the results go, they are not so entirely dissimilar. It is said that we bury our mistakes that we make in Bellevue Hospital. Mr. Mason cremates his. If I were to go over the oft-told tale of the uses of photography in medicine, I would only repeat what I have said upon another occasion, but I can assure you that the work we carry on at Bellevue Hospital would be far from complete were it not that our results are faithfully recorded in the photographic rooms, and while the records of my wards may be imperfect, biased by my own personal feeling or that of my house physician, the records that are made by our photographer are true to nature, are correct, are permanent, and I venture to say, will be found in the archives of the hospital long after the written volumes have passed out of existence. Now we appreciate not only the scientific exactness of photography as an aid to medicine, but we feel that in common with other workers in physical science, the broadening influence of one profession upon the other cannot be overestimated. We are dealing with, so far as is possible, exact quantities, and we are endeavoring to increase the sum and substance of knowledge. As the President of this Section has truly said, nature never gives up any of her secrets without a struggle, and we each of us feel in our own department that we are enlarging the domain of the Known at the expense of the territory of the Unknown. We each of us in our own department feel our ideas broaden from knowledge of the other, and as workers in physical science appreciate that although we are en-

croaching upon the territory of the Unknown, yet there is a land far beyond in which our methods can never penetrate, the land of the Unknowable. So as earnest workers after physical truth, we as physicians join hands with the photographers, feeling that we will be the better for the union, and working together, we can do much for the relief of human suffering and advancement of the enjoyment of life.

The *President* then called upon Mr. O. G. Mason to sum up and pass the benediction.

MR. MASON—I felt relieved when our President said he was going to call upon one more. I did not think he would pick me out. As to passing the benediction, I have been reminded since I sat here, by remarks started by Dr. Elliott in regard to amateurs, of the anecdote of the little girl who did some wrong thing, and as a punishment, was placed, not with the family at the table at dinner-time, but at a little side table, and as they always offered up grace, she felt it her duty to have grace at her table, and she said this: "O Lord, I am thankful to you that thou hast spread for me a table in the presence of my enemy."

I have thought of the contrast between this adjourned dinner and the dinner of the Photographic Section of the American Institute twelve years ago. There are two gentlemen in this room who were present at that dinner, our President and Mr. Roche. They will remember how we traveled over the upper end of this island carrying heavy apparatus, if we carried any. We took our dinner in a place somewhere up town. I do not think we could follow over the track that we went over that day, as it has since been built up. How everything is changed since that time! It was very hard to even induce men to try working dry plates. The professional would not do it, finally the amateurs did, and amateurs from that day began to increase. To the amateurs is due a great deal of the advance that photography has made.

One word in regard to the name of amateur. The name, I think, has been abused more in its connection with photography than any other word in the English language.

When a man comes to me as a professional and I freely tell him how I produce certain effects, I do not expect that he, as an amateur, will immediately enter into competition with me as a professional in the work which I am doing, and when he takes my hints and goes into the market and sells his product and still claims to be an amateur, I say he claims a title to which he is not entitled. The ama-

teur, who is an amateur, does not sell his work. I have come in contact with a great many amateurs in my work, and I have had very few secrets from them. I have no secrets from a man who is working as an amateur.

I am glad to see that the gentlemen who have attended our dinner to-night really have a right to the name of amateur; those who have dealt or dabbled more or less in amateur photography.

A gentleman and his daughter staying at X—, having received an invitation to a party a short distance off, sent to the railway station and ordered a fly to be sent to their residence at 8 P.M. the next day. The following morning at 8 A.M. a fly arrived. When asked his business, the driver said he had come, according to order, at 8 P.M. "Well, what do you suppose 8 P.M. means, then?" "Why, eight, punctual, mind," was the reply.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. Correspondents will please remember this. No attention will be paid to anonymous communications.

Q.—R. L. writes: Having read in your Photographic BULLETIN several chapters on the art of retouching by one Redmond Barrett, can the subject be got in book form and for how much? I hope it is, as I want it much. Barrett treats the subject well and it would sell well in book form. I hope you will be able to assist me in getting it.

A.—The articles you refer to were reprints from a foreign journal and we agree with you in thinking that it is certainly one of the best that has appeared on this subject for many years.

Unfortunately, no reprint of it in book form has ever been made and you will be obliged to consult the files of the BULLETIN.

Q.—F. S. writes: In your last Photographic BULLETIN of February 13th, page 67, I find a note of a new invention by M. Drouier in regard to a magnesium lamp for enlarging purposes. Would you please be so kind as to let me know if such are in the market, and where they can be obtained. If not, please give me address of said Mr.

Drouier, as I am very much interested in getting such a lamp, as I am experimenting on a new process of enlarging for which electric light cannot be obtained during the day in our city.

A.—The lamp you mention has not, so far as we know, yet been placed upon the American market. We would advise you to write to *The Optician*, 78 Fleet street, London, England, and they will doubtless furnish you with full details concerning it and where you can obtain it.

Q.—G. H. G. writes: Can the "Ballard Actinometer" be used to advantage with my 4 x 5-inch folding "Kodak," using transparent films? It has the Barker shutter and the stops are numbered 1, 2, 5 and 10. Please advise and oblige.

A.—The Ballard actinometer can be used with any make or kind of camera. In order to use the tables for determining the exposure, it will be necessary to determine the relation between the diameter of the stop and the focal length of the camera (the $\frac{f}{x}$ value).

See answer to J. M. C. in last issue.

Q.—G. M. writes: Enclosed you will find two photos. Please consider and let me know the reason why these photos turn yellow and foggy, but only after they are dry. As long as they are damp they look very clear and brilliant. The paper we use is N. P. A., silvered from two to three minutes on a bath 60 strong, and we fix our prints from 15 to 20 minutes. We have tried all kinds of solutions for toning, but we don't get the desired results.

A.—The yellowing is probably due to insufficient washing, or use of old hypo. Both the sample photographs sent us are overtone and the flatness is partially due to this, but mostly, we should judge, from want of proper contrast in the negatives from which the prints were made, both of them being thin and weak.

Q.—N. H. H. writes: Please give in your notes and answers in your magazine a recipe for making an ink or etching fluid for writing on glass.

A.—One that is largely used with good results is as follows:

| | |
|--------------------------|-----------|
| Carbonate of ammonium... | 14 parts. |
| Hydrofluoric acid | 16 " |
| Water | 4 " |

Thicken to desired consistency with gum arabic. If it is desired to etch very deeply, use less carbonate of ammonium; an increase

in the amount of this ingredient will make the marking whiter and more shallow.

Q.—E. F. B. writes concerning a new process for making tintypes, asking for any information that we may possess in this connection.

A.—The process to which you refer is simply the use of a ferrotype dry plate. Such plates were manufactured and sold by the Phoenix Dry Plate Co. some time ago. Personally we have had but little experience with them.

Q.—S. and B. write: What is the best method for burnishing prints made on American Aristo paper? Should a lubricator be used, and if so, what? Can you give us any information concerning the toning and handling of this paper?

A.—We would advise a perfectly dry burnisher, together with the use of a very little castile soap. For rich, warm, brown tones the acetate of soda and uranium toning bath is highly recommended. This bath should be slightly alkaline. Four or five washings with hot water, instead of solution A, will be found more economical and just as effective.

Q.—F. L. H. writes: Please answer through your columns: Do you consider that the hot water treatment of "Aristo" paper, as advocated on page 121, issue of February 27, 1892, BULLETIN, will answer the purpose just as well as the longer treatment by the Aristo Co.'s solution "A"?

A.—Our experience has shown us no difference in the results obtained by either method, and we prefer the hot water treatment, as it is somewhat simpler, and the materials used much easier to procure.

Q.—D. P. C. writes: We would like to

adopt the electric light for making solar prints, and we do not know how to get at it. Can you refer us to some party who can give us the information as to what we need, etc.?

A.—We would recommend your writing to Dr. L. H. Laudy, School of Mines, Columbia College, New York City, as he is well posted on matters of this kind, and will doubtless be glad to furnish you with the information you desire.

Q.—H. W. writes: Will you please answer through the Photographic BULLETIN how the bluish tint is obtained on the lantern slides that are sold by dealers, also what kind of a plate is generally used by them for making the same, as I have made some negatives with my 4 x 5 Climax Detective Camera and would like very much to make some lantern slides.

A.—It is possible to obtain the tint you mention by the use of wet plates, an eikonogen developer, or intensification after development with bichloride of mercury and an alkaline sulphite of soda solution. Any good slow plate is available for use in making lantern slides.

Q.—P. S. B. writes: Will you be kind enough to tell me the "times plate" the following plates are to correspond with in the Ballard actinometer tables:

Seed 23, Carbutt 16, Carbutt 20, Cramer "Banner."

Also, if using a Darlot rapid rectilinear lens, what allowance should be made on all exposures for its rapidity.

A.—The Seed 23 plates correspond with the 40 times plate in these tables; the Carbutt 16 with the 10 times; the Carbutt 20 with the 15, and the Cramer Banner with the 30.

No exposure allowance is necessary with the lens you mention.

TABLE OF CONTENTS.

| | PAGE | | PAGE |
|---|------|---|------|
| A HINT WORTH TAKING, by <i>W. Milliken</i> | 183 | OUR ILLUSTRATION..... | 183 |
| AMERICAN INSTITUTE—PHOTOGRAPHIC SECTION.—ANNUAL DINNER..... | 184 | OUR LETTER FROM FRANCE, by <i>Léon Vidal</i> | 166 |
| CAMERA BELLows.—STEREOSCOPIC PICTURES, by <i>G. W. Pearson</i> | 178 | PHOTOGRAPHY AND METEOROLOGY, by <i>Professor A. L. Colton</i> | 175 |
| COPYING ENGRAVINGS, by <i>P. C. Duchochoix</i> | 172 | THE APPLICATION OF ART TO PHOTOGRAPHY.—No. 2, by <i>H. P. Robinson</i> .. | 168 |
| EDITORIAL NOTES..... | 163 | VARIATIONS IN SUNLIGHT AND EXPOSURE TIMES..... | 161 |
| ON ENLARGING FROM SMALL NEGATIVES, by <i>Mr. W. I. Chadwick</i> | 180 | WHAT OUR FRIENDS WOULD LIKE TO KNOW..... | 191 |

THE
LIBRARY OF THE
UNIVERSITY OF MICHIGAN



MADE IN AMERICA. PATENTED LATER.

NEGATIVE ON GRAMER PLATE.

STUDY OF CHILD LIFE.

-89-

STRAUSS, ST. LOUIS.

ANTHONY'S

Photographic Bulletin.

EDITORS :

PROF. CHARLES F. CHANDLER, PH.D., LL.D.

PROF. ARTHUR H. ELLIOTT, PH.D., F.C.S.

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No. 7.

NEW YORK CAMERA CLUB EXHIBITION.

ONE of the photographic events of the spring is the exhibition of the New York Camera Club. Not that it is very extensive, but it is always interesting and worthy of very serious attention from those who love our art and wish to learn the drift of progress from year to year. There is another point about this exhibition that is always pleasant : it is conducted without any loud heralding, and relies upon the reputation of its members to call out visitors. And judging from the attendance at the gallery on Fifth avenue during the past week, its members may feel complimented upon their success in producing an attractive display of their work. The rooms have been crowded on several occasions, and these results, together with the fact that the lantern exhibitions have shown a similar condition, go to prove the wisdom of the efforts now being made to move the Club to larger and more suitable quarters.

The exhibition of this spring is notable for two things—first, the presence of such a small amount of poor work, and secondly, the beauty and high grade of the best work shown. Thirty-five members have exhibits this year, against twenty-eight of last season. The number of exhibits is not as great as shown last year, but the quality of the work is decidedly higher. In a word, quantity has been made subordinate to quality—a very desirable change, and one that should be carried out with all our photographic exhibitions. It is better to have one or two really good efforts on exhibition than to show a series of attempts at their production. These attempts are decidedly good things to have around the Club rooms for the instruction and edification of fellow-members, but are out of place in a photographic exhibition, where art should be supreme.

Any attempt to go into details in regard to all the various exhibits is out of the question in the space at our disposal. Any exhibitor in this season's display may feel honored in being in such goodly company. But there are a few gems that will illustrate the lines—

Order is heaven's first law, and that confess't,
Some are and must be greater than the rest.

In landscape work the *piece de resistance* is No. 37, "October," by Edward H. Graves. It is a view of a roadway and overhanging trees. In this picture we have the spirit of the artist; and the beauty of the effects of light and shade in harmonious contrast so finely brought out in the unusually good platinum print, gives us a piece of photographic work rarely seen, and picturesque in every sense of the word.

Yet another beautiful piece of work by the same gentleman is No. 104, "Along the Canal." We might call this a liquid gem, it is so charmingly done. No. 43, "Under the Willow," is another fine piece of work by the same. Also No. 6, a platinum print, "My Jack," a capital picture of a horse's head, is by Mr. Graves.

In portrait work, the palm must be borne by James L. Breese for Nos. 66 and 69, both carbon prints of the highest order of excellence. It seems almost beyond belief that such work can be produced with the carbon process and also by an amateur. These portraits are beautiful illustrations of artistic posing, excellent management of the light to give good modelling, and uncommon skill in handling a process really difficult even in the hands of the professional worker.

Another beautiful set of studies is Nos. 12, 13, 14, 15 and 16, by William A. Fraser. It is a series of exquisite beauty, giving some of the very best pictures of flowers we have ever seen produced on the photographic plate. We returned to look at these again and again, fascinated by the delicacy of light and shade, as well as the great beauty of detail that is found in every petal and leaf on the pictures. It is really marvelous to think that the lens and dry plate, guided by a hand moved with a love of floral beauty, can preserve for us in pictures such beautifully delicate examples of nature's handiwork. The pictures consisted of bouquets of various kinds of flowers arranged in handsome vases, and lighted with skill and a desire to bring out the beauty of each flower. Among the more important were roses, chrysanthemums, lilies of the valley, golden rod and hydrangea, all showing delicate half tones, and so well done that the faint veining in the petals of the flowers are readily seen in the pictures.

Another series of similar studies of flowers came from William J. Cassard, and was uncommonly good work. The flowers represented were Cousine roses, American Beauties, tulips, lilies of the valley, narcissus and pansies. They were all beautiful pieces of photographic work, but perhaps a little underexposed and lacking in the finer details. Another frame, No. 63, "Salmon Flies," a platinotype by the same worker, was a gem in delicate work upon colored objects.

It is a good while since we have seen any studies of the same class to equal No. 64, "Sheep Studies," by Miss Mary E. Martin. These pictures are charmingly executed both as to negatives and prints. The latter are in platinotype and show uncommon skill in working this method.

A trio of portraits, No. 65, by Mrs. Jonathan Thorne, Jr., was most excellent work. The best of the group, "Trying a Weed," was a strong male head with hat, and smoking a cigar. It proved a very fine study and well finished in the platinum print to bring out the strength of a fine face. "Arrived at Last," a lady reading a letter, in the same group, was also a beautiful piece of work, with a beautiful subject well posed. All were platinum prints of the best grade.

No. 9, "Portraits," in albumen prints, by Mrs. R. P. Lounsbery, were excellent pieces of work, a portrait of the first President of the Club, Mr. W. T. Colbron, being particularly good. No. 17, also "Portraits," by the same worker, leave nothing to be desired as to posing and general good work. They are worthy of a professional worker of a high order.

No. 20, a frame of French views in Brittany and Paris, by Miss Frances Virginia Stevens, were very interesting work, well done and nicely printed in platinum. No. 24, another series of views in Europe, by the same worker, were also finely done.

No. 105, a plain silver print, "The Only Comfort Left," by Mrs. Willard Parker, was a capital study of an old woman smoking a pipe under a porch. The print had many of the qualities of a platinum print. "Captain Joe," No. 18, was another good piece of work by the same member, also a plain silver print. It was a picturesque scene of an old ship captain leaning on a wicket gate in front of an old-time sea-side cottage.

Miss M. L. Ewen had a pretty little shore study of children in a boat, No. 115, "Ready to Embark." It was well done and caught the spirit of the children to perfection. No. 50, "Old Bridge at Leeds," was also very good.

Among other workers of note we may mention the President of the Club, Mr. David Williams, with his "Souvenirs of Portugal," silver prints toned with platinum and giving fine effects; Mr. Harry B. Reid, the Secretary, in the same kind of work in toning and also in pure platinotypes, showing views in Pennsylvania, Cornwall, N. Y., and on the Bronx. Mr. W. Townsend Colbron also had some fine portrait work on Aristotype paper, a view at a railroad crossing on celluloid which was very effective as a print, "South Street, New York City," and Washington Bridge. All were well done, as usual with this worker.

Mr. Lindsay C. Ivory had a number of exhibits. Among the best and most interesting were, "With Rifle and Camera, the Pistol Lakes, Maine," a series of characteristic hunting views and capital platinotypes. A "Portrait" sepia print by the same worker was also an excellent exhibit.

A "Portrait" by E. N. Dickerson was well done and we believe represented Mrs. Barrios.

A "Country Road" by H. C. Mabie, a kallitype print, was a pretty and picturesque piece of work, well worthy of study.

J. Howard Wainwright showed a number of good studies in plain paper printing in his "Landscapes," Nos. 85 to 89.

An albumen print of great beauty was shown by Guy Phillips in his picturesque view "On Saw Mill River Road." It was an excellent piece of work.

Mrs. James S. Day had some good albumen prints in No. 44, the barnyard scene, "Midday Meal," being an uncommonly good piece of photographic work.

We would like to mention many other good things that we saw from such members as Franklin Harper, Mrs. H. W. Cannon, Walter Pierce, William Bunker, Dr. E. P. Fowler, Lieut. Moore, and others whose work is always good and interesting. We can only say in closing that this exhibition was the best ever given by the club and in New York City, quality, not quantity, being the ruling feature, and by home talent.

EDITORIAL NOTES.

ELECTIONS of officers in the following clubs are announced as below : Photographers' Club of Baltimore, President, H. D. Williams; Vice-President, F. M. Clotworthy; Treasurer, F. A. Noble, and Secretary, A. S. Murray. The California Camera Club, President, H. B. Hosmer; Vice-President, H. C. Tibbetts; Secretary, T. P. Andrews, re-elected to a third term. The Rockford (Ill.) Camera Club, President, W. L. Eaton; Secretary, W. L. Blinn; Treasurer, E. W. Linden. The Newark Camera Club, President, T. W. Harvey; Vice-President, C. W. Baldwin; Treasurer, Edward Groves, Jr., and Secretary, H. A. Harvey, Jr. The amateurs of the Oranges have formed an association, but their list of officers has not yet come to hand. The Society of Amateur Photographers of Savannah, Ga., have established headquarters and commenced their work with an exhibition of slides.

WE understand that Dr. Eder is at work on a new developer, which he has named metol, and which is associated with glycerine. It is said to be very energetic and of excellent keeping qualities.

THE advantage of photography in reducing messages to such a size as renders them possible of transmission by carrier pigeons, has probably never been better demonstrated than during the late Franco-Prussian war, when a vast number of letters were copied by its agency and enclosed in quills, and so carried across the lines.

A PROJECT has been started by the Photographic Society of Vienna toward erecting a monument to Prof. Petzval, whose researches render him worthy of all that can be done in this direction.

W. H. JACKSON, of Denver, Col., has lately made a very beautiful set of winter pictures of Niagara. Mr. Jackson, as many of his friends know, holds the position of photographer to the United States Geological Survey.

A CORRESPONDENT writes to suggest that if the yellow prussiate of potash be omitted from the hydroquinone developer, recommended by Dr. A. Miethe, there will be less liability to fog. The same writer states that he is obtaining fine results on "Aristo" paper with the soda acetate bath, and getting higher prices for work on that paper than for any other.

THE use of aluminium as a substitute for glass in the manufacture of dishes and vessels for holding fluids has been strongly advocated of late, and the question has called forth the statement that the metal was so soluble in certain chemical compositions as to be unsafe for use. Prof. G. Lange, in an able article in *Engineering and Mining Journal*, has clearly demonstrated that such is not the case, and it is quite probable that, on account of its light weight and indestructibility, we shall soon find it occupying a prominent place in our dark-rooms.

WE note the appearance of *The Tripod*, published by O. H. Peck, of Minneapolis, Minn., and are pleased to see that it caters to the wants of both sides of

the profession, giving free space to those who would advertise for positions as well as affording a medium for the announcement of goods for sale.

THE committee appointed by the Society of Amateur Photographers of New York to secure and take charge of exhibits for the fifth joint exhibition to be held in Boston in May urge the importance of earnest work, that the best possible showing may be made.

All intended exhibits should be in their hands by the 15th of April. Entry forms and information may be had on application to the committee or at the rooms of the society.

ONE of our recent illustrations for the *BULLETIN* is thus commented on by the *Photographic News* of London: "An unusually fine study of child life is published in the last number of Anthony's *Photographic BULLETIN*. It is by Mr. Place, of Chicago. The subject is a pretty child in rags, with boots far too large for its little feet. The appearance of the picture speaks well for the American 'Aristo' paper upon which it is printed. It is a pleasure to notice a picture like the above, for, truth to tell, the business of illustrating photographic journals abroad is rather overdone. Of course, one cannot have too much of a good thing, but too often the subjects are really not worth the excellent work bestowed upon them in preparing them for publication." When one of our neighbors of the standing occupied by the *Photographic News* speaks thus of our efforts, we feel justified in quoting their remarks.

THE Colorado Camera Club gave its initial slide exhibition to its friends on the 9th of March last with great success, W. H. Jackson and H. S. Bellsmith being among the number of those who contributed slides.

The Lynn Camera Club also made its first appearance in a similar rôle on the 16th, which was followed for three afternoons and evenings by an exhibition of prints. Both were eminently successful.

THE query is raised by a correspondent of one of the English photographic papers as to whether lens mounts and stops have ever been made of black celluloid, and if not, why it would not be a feasible and advantageous plan? And also, if celluloid has ever been tried in conjunction with magnesium ribbon, his idea being that in the latter case the danger of the ignition ceasing would be entirely obviated.

A CAMERA club has been formed in Quincy, Ill., and starts out under very favorable auspices. The New Britain, Conn., Club have just given a most interesting exhibit of their work, several hundred prints having been shown, and the High School Camera Club, of Hartford, have also given their annual exhibition during the past month.

REGARDING arrangements for the photographic display at the World's Fair, it has been decided that each nationality will have charge of its own exhibit, and that it is not possible to group all together, as has been proposed by some. A large space will be reserved in the building of the Liberal Arts for the display of photography and photographic appliances from the United States, and the

art, as represented by this country and others as well, will be well furnished with accommodations to make a creditable display.

A most interesting and instructive collection of photographic and photo-mechanical copies of sketches and paintings by Rembrandt and Ferdinand Bol is now on exhibition in Boston, at the Art Museum. The collection embraces more than three hundred of the celebrated carbon prints by Braun, and presents with wonderful strength and accuracy the technique of the artists represented.

MISS CATHERINE WEED BARNES gave an interesting and valuable talk before the Hoboken Camera Club last month, on the subject of Lantern Slides, after which a supper was served, and the balance of the evening devoted to sociability. The Club is in a very prosperous condition.

WE notice the name of our good friend, J. Wells Champney, in the list of artists under whose direction the long talked of series of tableaux at the Berkeley Lyceum were arranged.

THE New Orleans Camera Club and the Portland, Me., Camera Club have both given Lantern Slide exhibitions during the past month with great success, and another is in process of preparation now by the New Orleans Club, which is showing increasing activity and prosperity.

ENGLISH NOTES.

WITH the approach of Easter the photographer awakes from a state of hibernation. The gleams of the April sun and the peeping forth of the spring flowers bring joy to his heart. Great is the turmoil in the darkroom! Everything receives a thorough cleaning; new solutions are made up; every instrument is tested—the brass work oiled, the wood-work rubbed; a fresh stock of plates, films, paper, etc., is laid in, and Jones, Brown and Robinson swear—each and all—that this season shall witness great achievements!

But may we ask of the elements to be a little kinder to us in the year of grace, 1892? The sorting out and cataloguing of the negatives of 1891 has convinced most workers that a worse season for out-of-door work was, perhaps, never known in this country. Rainy days and leaden skies predominated in the summer months. But the sun-spot minimum is over at last, and I predict better luck for camera carriers in the season now just commencing. But be ready. Spend an hour or two daily in putting your tools into perfect order; have the necessary repairs done, and get in your materials before the stock dealers and plate makers are overwhelmed by the rush of orders which come in—all together—with the first days of summer.

Much discussion has lately taken place as to the permanency of bromide and Aristo prints. The bromide prints which have appeared in the English annuals all show signs of fading, while those with which Anthony's "International Annual" have been illustrated are standing the test of time splendidly. This speaks well for the care taken by American workers. For in any process permanency depends largely on the thoroughness with which the necessary manipula-

tions are performed. But, after all, a finished bromide print is only a picture in metallic silver, and it is impossible to claim for it the same high degree of permanency as for a picture in platinum or in carbon. But there are plenty of faded or discolored prints by even these two last named processes to be found—the results of careless or improper manipulation. And again, no picture can be more permanent than the support upon which it is made, and surely paper is sufficiently fragile, combustible and affected by damp to cause us to wonder how many of even the platinum and carbon prints now in existence will be still in the possession of our descendants, say two or three centuries hence. It is certainly a pity that ceramic photographs (including enamels upon copper) are not more sought after, for both as regards material of image and its backing or support, they contain the highest probabilities of permanency, while their beauty and their cost would lead to their being cared for and preserved.

Those who believe in the possibilities of great changes coming over the world, who think that England may some day be a desert and the United States a wilderness (and they point to the civilization of old, to Greece and Rome and Palestine, in support of their theories), propose that we should select specimens of all our choicest objects—our paintings, drawings, sculptures, books, in fact everything that we hold precious—place them in hermetically sealed cases and bury them deeply and secretly in some secluded place, such as Salisbury Plain, together with documents stating why and by whom they were placed there. Then, in the course of thousands of years, when these rich and rare deposits came to light, posterity would exclaim, “What clever people (or, what great fools?) were the men who lived in the latter part of the nineteenth century!” Now, this idea is rather a charming one, but why should we not substitute permanent photographs of the objects for the objects themselves? Then the various masterpieces of art and of science could remain above ground and fulfill their duty of pleasing and instructing mankind, instead of being buried on what would after all be only the off-chance of their ultimate discovery and appreciation. Besides, the great advantage of photography is its power of cheap and unlimited reproduction, and instead of having one hiding-place only, we could secure any number we pleased—as under the Pyramids of Egypt, ninety feet below the centre of Broadway, etc.

It is pleasant to know that the fund for Dr. Maddox (who published the first gelatine dry plate formula in 1871) is assuming fair proportions, the British contributions now exceeding \$1,500. It is to be regretted that a section of the photographic press has allowed a Mr. J. Burgess and his friends to make foul and libelous charges against Dr. Maddox in their pages. Burgess prepared and sold gelatine dry plates in 1873; but he never published his methods, and (according to rules well known to every man of science) has therefore not the slightest claim to any consideration in the matter. It may be asked why do editors publish such rubbish? But the qualifications of a successful editor nowadays depend rather upon his business capacities than on his knowledge of his subject. The advertisers—the “trade,” that is to say—are all-powerful.

Within the last year or two Mr. Bolas has been dismissed from the editorship of the *Photographic News*, and Mr. Hastings from that of the *Amateur Photographer*, simply because they offended the advertisers, the “trade.” This is indeed a contemptible state of things.

The following formula for a mountant has lately been published by the

Ilford Company, and I have found it so excellent for use with enameled prints (though it answers equally well for all others), that I reproduce it here—

| | |
|----------------------------|----------------------|
| Best thin Scotch glue..... | 3 ounces. |
| Golden syrup..... | $\frac{3}{4}$ ounce. |
| Methylated spirit | 3 ounces. |
| Water | 3 “ |

Soften the glue in 2 ounces of the water in a jar; heat the jar gently in a pan of hot water; when thoroughly liquid add the syrup (= refined treacle). Add the remaining 1 ounce of water to the methylated spirit, and pour this by degrees into the jar, keeping the mixture stirred all the time. This mountant will keep good indefinitely, and is always ready for use by warming the bottle containing it in hot water; it dries readily, but not too quickly.

Users of isochromatic plates are often troubled to find a suitable position for the screen of yellow glass which is generally used along with such plates. I find the best place to be a grooved frame fitted just inside the front of the camera and close behind the lens. As several tints of yellow glass are necessary for different objects, it is an advantage to be able to change the yellow screen rapidly and without trouble; moreover, this obviates the necessity of changing the screen every time the lens is changed, which is necessary when the screen is used in the diaphragm slot, or anywhere within the lens tube.

Marion & Co. (perhaps the largest firm of stock dealers in the United Kingdom) now mark all plates of their own manufacture with the absolute rapidities, as shown by Hurter and Driffield's exposure-meter. I used this capital instrument with much satisfaction all last season, but it needs to be suited to the latitude of the district in which it is to be used. Special scales have, however, been prepared by the inventors for use within all regions where the instrument is likely to be in demand.

The finest photographs of stained glass windows which I have ever seen are those prepared by Mr. S. B. Webber, of the London Camera Club. This worker uses isochromatic plates, with a yellow glass screen in the lens tube. He backs all his plates with burnt umber mixed with glycerine, and laid on with a broad, soft brush; a piece of india rubber cloth is laid on this to prevent damage to the dark slides, and the backing is wiped off with a sponge just before development. The exposures varied from 6 to 12 minutes in summer, using stop $f/22$.

Mr. A. R. Dresser is known as a man who does first-rate instantaneous work, and who enlarges and prints from his negatives upon bromide paper. It is, therefore, worth knowing that he strongly recommends the following developer for both classes of work:

| | |
|--------------------------|------------------------|
| Eikonogen..... | 1 ounce. |
| Sulphite of soda..... | 4 ounces. |
| Carbonate of potash..... | 1 ounce. |
| Washing soda..... | $1\frac{1}{2}$ ounces. |

Dissolve all these chemicals in about 20 ounces of hot water, and make up to 30 ounces by adding more water. Use this developer full strength for negative work, and also for bromides made from dense negatives; but for thin negatives dilute with an equal volume of water. If the negatives are over-exposed and come up too quickly, pour off the developer, and soak the plate in cold water alone, adding a little developer by degrees. Mr. Dresser finds no

advantage in using bromide with eikonogen. When I fail to get density with this developer, I can generally secure it by transferring the negative to a strong solution of hydroquinone; and this dual method of development is strongly recommended by

TALBOT ARCHER.

LETTER FROM GERMANY.

BY DR. H. W. VOGEL.

Photography and the Eyes.—Distortion of the Photographic Image.—Instantaneous Photography of Language.—Toning Gelatino Bromide of Silver Pictures.—Teleobject Glasses.

THE space of my letter would not be sufficient for the many things I would report to you to-day, if they were of more than local importance; as, for instance, the intended strike of the operators, who have been misled by some socialistic agitators, and trusted to their promises. Whether they will be successful we doubt, as many operators are here out of work at present, and would be glad to fill at once the positions occupied by the strikers. We shall see.

With the naked eye we can see a landscape magnificently from an express train, because the eye is so mobile as to counteract all jolting caused by the train. But as soon as we look through an opera glass we shall see that all mobility has vanished; everything seems to dance in front of the eye.

This question is now connected with the distortion of the photographic image, about which so much has been lectured lately in the Photographic Society of Great Britain, although nothing new has been said about it, but, on the contrary, much less than published by me in 1870 in the *Philadelphia Photographer*, with numerous cuts. But, of course, twenty-two years have passed since, and what was published at that time is nobody's business any more than at the present day. It is here exactly the same as with the "photometer" published by me in 1868. At least eight patent applications have been made for the same since, and even from some of my scholars. It is actually astonishing how many new inventions turn up at present that were known twenty to twenty-five years ago by everybody. Recently I received a letter from one of my former scholars, who is deaf and dumb. It reads as follows:

It is supposed to be known that every motion consists of a number of composed appearances of motion, which succeed each other so rapidly that they appear to our view as only a single one. Our eye is only capable of forming the pictures of the passing objects for the one moment in which they (single or in masses) are before the same at visible distance.

Instantaneous photography has now advanced to such a high state of perfection, that with very ingenious apparatus in the time of the fraction of a second the several phases of apparently single motion can be fixed photographically. The prints obtained therefrom are pasted in succession at equal distances upon a strip of paper which is put together in a circular shape, so that beginning and end will meet. This picture circle is placed into an Anschütz "quick viewer," whose upper part is likewise circular (but wider than the picture circle, and provided with slit openings), and can be put in motion upon a disk. When doing this, the (apparent) motions of the pictured objects are looked at in rotation through one of the slits.

Messrs. Demeny and Marcy, from the College of France, have made use of

this circumstance to photograph the motions of the lips of a speaking person, and to unite the pictures, as shown above in the "quick viewer," so that the deaf and dumb will learn gradually by imitation of the motions of the lips, which (apparently) take place before their eyes, to explain themselves to everybody without having recourse to the sometimes very complicated language of signs, which is not to everybody's liking. This is, indeed, one of the grandest applications of the fine art of photography in the service of suffering humanity. The unfortunates can in this manner exercise literally every moment, and by proper guidance be brought to the highest degree of distinct pronunciation, and it is evident that a great deal of trouble and time is saved, as even the most patient and humane teacher is not capable of demonstrating continually the very exacting although mute speaking exercises, not to say anything at all about the precision of them.

Messrs. Demeny and Marcy deserve the merit for having been the first in this direction for the removal of a great deal of human suffering. To the writer of this it would give the greatest satisfaction if his lines would cause a sufficient animation among the friends of photography, to test whether instantaneous photography could not be applied in deaf and dumb institutes for the benefit of the unfortunate scholars.

It gives me pleasure to read that photography exists not only for the service of human vanity.

Pains have repeatedly been taken, to give to the gelatino-bromide of silver pictures the same warm tone as is rendered by the albumen paper. After application of the oxalate of iron developer it is difficult to remove the iron completely from the picture; the smallest traces of iron cause spots in the white parts of the print. The hydroquinone developer gives good results, but if the paper should happen to be a little old, yellow spots will be obtained. With the eikonogen developer, however, we obtain excellent results, as follows:

Dissolve in boiling water:

| | |
|------------------------------|--------|
| Sulphite of soda | 40 gr. |
| Eikonogen | 10 " |
| Carbonate of soda | 15 " |
| Carbonate of potassium | 10 " |

After everything is dissolved, add water until the volume of the solution amounts to 300 c.c. In most cases it is good to mix the developer with some water. The quantity will soon be found out by experience. The use of bromide of potassium is not necessary. In case of over exposure, when the picture appears quickly, the developer should at once be removed and replaced by water, with a gradual introduction of the developer.

The following formulas are for intensification:

1. Intensification with chloride of gold:

| | |
|------------------------------|------------|
| Ammonium sulphocyanide | 8 gr. |
| Chloride of gold | 1 " |
| Water | 1,000 c.c. |

Black-blue or blue tones are thereby obtained.

2. Intensification with bichloride of mercury; as is known, by means of a bichloride of mercury solution, washing and bathing in a soda solution. To obtain warm tones, put the bath in the following solution:

| | |
|---|-----------|
| Saturated sulphite soda solution | 1 c.c. |
| Ten per cent. bromide of potassium solution | 60 drops. |
| Water | 4 c.c. |

3. Intensification with nitrate of uranium.

Prepare the following solutions :

A.

| | |
|-------------------------|----------|
| Acetic acid..... | 28 c.c. |
| Nitrate of uranium..... | 2 grs. |
| Water..... | 500 c.c. |

B.

| | |
|--------------------------------|----------|
| Acetic acid..... | 28 c.c. |
| Ferricyanide of potassium..... | 2 grs. |
| Water..... | 500 c.c. |

These solutions will keep separated for a long time, whereas they will spoil very quickly when mixed. Equal parts of A and B are taken for intensification.

There is much excitement now about teleobjective glasses in Europe. Dallmeyer, Miethe and Steinheil assert each to have solved the problem.

So far I have seen a sample only of Miethe and have to wait for an opportunity to examine the others before I can pass a proper judgment.

BERLIN, MARCH, 1892.



THE CHEMISTRY OF THE METALS OF THE GOLD CLASS AND THEIR SALTS, AND THEIR BEHAVIOR IN PHOTOGRAPHY.

(Continued.)

BY P. C. DUCHOCHOIS.

PLATINUM.

PLATINUM is found in small grains alloyed to palladium and the other metals of the group. To separate it, the ore is dissolved in aqua regia rich in hydrochloric acid, and sal ammoniac is added, whereby a yellow salt, ammonium platino-chloride, is precipitated. This salt heated to redness is decomposed, leaving behind the platinum in a spongy form.

Platinum is grayish white, as soft as silver, very ductile and very tenacious; a wire two millimeters in diameter breaks only under the weight of 124 kilograms. Density when fused, 21.45.

It is infusible at the heat of furnaces, but melts easily at that of the oxygen-hydrogen gas. Air and water have no action upon it at any temperature. Most of the acids, hydrochloric, sulphuric, nitric, do not attack it. Aqua regia dissolves it with difficulty. It unites directly to chlorine, not to bromine or iodine.

Platinum when in a fine state of division—sponge of platinum, platinum black—produces the most interesting and remarkable actions. It causes the union of hydrogen to oxygen with incandescence, as shown in the hydrogen lamp.*

Alcohol is oxidized in contact with platinum black and becomes acetic acid, and sulphurous acid unites to oxygen to form sulphuric anhydride. Formic acid dropped on platinum black is resolved with incandescence into carbon dioxide. All the sugars in solution with an alkali are transformed into water and carbon

*The platinum sponge used in the lamp loses the action in a certain period by exposure to the air or by often being heated to redness when in use. To revive it, immerse the sponge heated red hot into concentrated nitric acid.

dioxide in presence of the black or the sponge of platinum. But the most remarkable actions produced by platinum in a state of division are to cause the union of gas ammonia with oxygen in giving rise to nitric acid, and that of hydrogen with nitrogen, the result being ammonia.

Platinum black is prepared by boiling a solution of platinic chloride with sugar and sodium carbonate until the precipitate formed becomes black and the solution colorless.

Platinum sponges are obtained by the calcination of ammonium platinic chloride.

The most useful alloys of platinum are: The alloy formed by equal parts of platinum and steel. It is malleable, inalterable in the air and receives a beautiful polish. It is employed to make mirrors of a very fine color.

The alloy of 1 part of platinum and 8 parts of steel does not tarnish in the air.

For cutting tools, the alloy employed in the arts consists of from 1 to 3 per cent. of platinum alloyed to steel.

Platinous chloride, PtCl_2 . This salt contains 73.65 of platinum per 100. It is prepared by passing a current of sulphur dioxide through a hot solution of platinic chloride, when a precipitate is thrown down, which is the compound in question.

Platinous chloride is a greenish brown powder, unalterable in the air at common temperatures. Exposed to the luminous action in presence of organic matters it blackens, being reduced to metal with formation of platinic chloride, and when heated to redness it is resolved into its elements.

It is insoluble in water, nitric and sulphuric acids; soluble in hydrochloric acid, which it colors purple. The solution is unalterable if the air be excluded; otherwise platinic chloride is formed.

When in preparing platinous chloride the platinic salt is not entirely reduced, the mixture dissolves in water, and by evaporation the platinous chloride precipitates as a brown powder very soluble in hydrochloric acid.

Potassa and soda dissolve it, and if alcohol be added to the aqueous solution the metal is precipitated as platinum black.

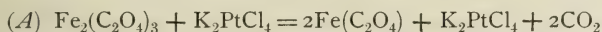
Platinum chloride forms with the alkaline chlorides double salts called platinoso-chlorides or chloro-platinites. They are prepared either by adding the alkaline chloride to a solution of platinous chloride in hydrochloric acid, or by adding the platinous chloride to a hot solution of the alkaline chloride, then crystallizing. The potassium and ammonium salts form red prismatic crystals soluble in water. The sodium salt crystallizes with difficulty. It is very soluble in water.

Potassic chloro-platinite is prepared, according to its formula, K_2PtCl_4 , by adding 64 parts of platinous chloride to a hot solution of 36 parts of potassium chloride, or by adding 18 parts of potassium chloride to the platinous chloride obtained from 24 parts of platinum. The solution contains a little over 50 parts of the compound in question. It forms with silver nitrate an insoluble red precipitate, Ag_2PtCl_4 , which light blackens. By treating this compound with hot hydrochloric acid the metal dissolves. If treated with aqueous ammonia, silver chloride first dissolves, and the residue—a yellow compound—dissolves in excess.

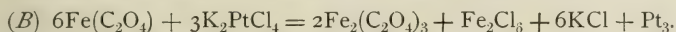
The precipitate formed by silver nitrate and platinic chloride is considered a mixture.

Platinous chloride was without application in photography until Mr. W. Willis, Jr., devised a very elegant printing process yielding permanent proofs based on the reduction of the salt by ferrous oxalate. The process is substantially as follows: A sheet of paper previously sized with arrowroot or gelatine is brushed with a solution consisting of 1 part each of potassic platinous chloride and ferric oxalate and a trace of oxalic acid in 12 parts of water, and then rapidly dried and kept in a desiccating box. The paper is exposed under a negative until a faint image is visible, when the latter is fully and instantly developed by simply drawing the paper over a warm solution of neutral potassium oxalate, 4 to 15 of water, acidified with oxalic acid. The image is fixed by washing first in an aqueous solution of hydrochloric and 1 : 80, twice renewed, then in water.

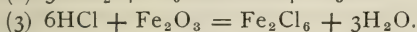
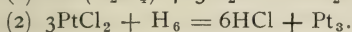
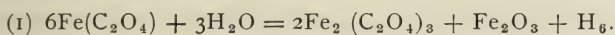
The theory of the process is as follows: By the agency of light the ferric oxalate is reduced to ferrous, which, when dissolving in contact with the warm solution of potassium oxalate, reduces the platinous chloride, probably itself to some extent acted on, since light reduces it when in contact with organic substance:



then



The last equation represents the ultimate result, for in this, as in all the other similar chemical photo-actions, the metal is reduced by nascent hydrogen,* thus:



Pizzighelli and Hübl give the following directions to prepare the potassic platinous chloride for photographic use: "Fifty grams of platonic chloride are dissolved in 100 cubic centimeters of water, and through the solution a stream of well washed sulphurous acid is passed until a drop of the liquid does not form with a solution of ammonium chloride the yellow precipitate characteristic of the platonic chloride. The solution thus obtained is a mixture of platinous chloride and hydrochloric and sulphuric acids. To convert the platinous chloride into the double potassic salt, the cold solution is poured into a porcelain vessel and while agitating with a spatula a hot solution of 25 grams of potassium chloride in 50 cubic centimeters of water is added. After 24 hours the crystalline powder is collected on a filter, washed with very little water, then with alcohol, until the filtrate has no acid reaction. The crystals are then spread on filtering paper and dried in the dark; for the salt exposed to the luminous influence in presence of alcohol is easily reduced. By operating as above with 100 grams of platonic chloride one obtains from 74 to 75 grams of the double salt, *i. e.*, 95 per cent. of the theoretical quantity. If well prepared it will dissolve in six parts of water and the solution will be neutral, which is important when the salt is used in platinotypy."

(To be continued.)

All communications for the columns of the BULLETIN should reach us on Monday preceding the day of issue, to insure their publication at that time.

* See our book, "The Photographic Image," a theoretical and practical treatise of the development in the gelatine, collodion, ferrotype and silver bromide paper.

[From the Journal of the Photographic Society of India.]

NOTES ON SOME NEW RAPID ORTHOCHROMATIC COLLODIO-BROMIDE EMULSION PROCESSES.By COLONEL J. WATERHOUSE, S.C., *Assistant Surveyor-General of India*.*

GELATINE dry plates have now taken such a hold on the photographic world that it would be almost useless to expect any general return to collodion, whatever its advantages might be. For all ordinary purposes ready-made gelatine plates must remain the most convenient medium for the sensitive film. There are, however, many photographic operations in which certain qualities are required in the negative or transparency, which are far better obtainable with collodion than with gelatine, and this is the case with most of the copying processes used for the reproduction of drawings and works of art in line or half tone. Here, in Calcutta, we are obliged to use the old wet collodion process for all our copying work in the Survey of India Office, and the same is the case in most of the establishments in other parts of the world working process blocks and other photo-mechanical processes for reproduction of line work. Now, as some of you may know, the practice of the wet collodion process is attended with many inconveniences, in the way of nitrate of silver baths which are difficult to preserve in good order and to keep one's fingers in a state of perpetual blackness, the drying of the films and other troubles, which may be all avoided in working an emulsion process. As collodion processes go, the wet process is fairly sensitive, and though far below gelatine in sensitiveness, it is, as a rule, much quicker than the ordinary dry collodion processes, and for this reason the latter have, so far as I know, not generally come into use in establishments like ours, where a large amount of copying work is done and wet collodion has so far held its own.

I have often thought that the experience gained in making the highly sensitive gelatine emulsions might possibly be applied to the preparation of very sensitive collodio-bromide emulsions, and it has, in fact, already been done by Captain Abney and others, but with very little practical experience in emulsion making with collodion, one did not quite know what process would be likely to best answer for ordinary work.

When I was in Europe last year, I was told in Berlin of an orthochromatic collodion emulsion, prepared by Dr. E. Albert, of Munich, which was said to give very good results and to be very sensitive. So being afterward in Munich I paid a visit to Dr. Albert, who very courteously showed me a good deal that was interesting, and I was specially impressed by the sight of his negatives of copies of paintings taken with his orthochromatic collodion emulsion. I have never before seen such fine negatives, full of the most brilliant soft gradation and detail, and of the beautiful violet-purple color of the best wet collodion negatives which one misses so much in gelatine, and which indicates, moreover, an exceeding fineness of deposit. The process seemed a most valuable one, and I should have got some of the emulsion for trial; but was told that it would not keep in a hot climate. Dr. Albert's emulsion has been on sale in Europe for the last year or two, but little was known of the process of preparing it, except that the coloring solution contained one of the eosin dyes and some picrate of ammonia, the latter serving in place of a yellow screen.

Shortly after my return to Calcutta last November, I read in *Paris Photographie*, Mons. Nadar's excellent monthly, an extract from the *Correspondenz*, of a paper by Dr. A. Jonas, of Vienna, describing some experiments he made, at Dr. Eder's suggestion, in preparing an emulsion similar to Dr. Albert's. It seemed to me worth trying these formulas, and when I did so, I was quite surprised at the results obtained, and especially by the wonderful sensitiveness conferred on the emulsion by the addition of the strong picrated erythrosin silver solution, so that the colored collodion emulsion was about as sensitive as ordinary gelatine dry plates. No such enormous rise in sensitiveness is noticeable in orthochromatizing gelatine dry plates with weaker erythrosin silver solutions.

* From author's corrected sheets.

Dr. Jonas' method of working, as given at length in the *Photographisches Correspondenz* for July, 1891, is briefly as follows:

The employment of the silver and ammonia method of preparing the silver bromide emulsion, which is so successful with gelatine, does not answer so well with collodion, because the free ammonia acts injuriously on the collodion. This difficulty is overcome in the following process by neutralizing the free ammonia with acetic acid, and moreover, the emulsion so obtained is exceedingly fine in the grain and creamy.

SOLUTION I.

| | |
|-------------------------------------|-----------|
| Ammonium bromide..... | 64 grams. |
| Absolute alcohol..... | 800 c. c. |
| Thick collodion (4 per cent.) | 1,500 " |
| Glacial acetic acid | 65 " |
| Distilled water..... | 80 " |

•The ammonium bromide is first dissolved in the water with heat, then the alcohol, collodion and acetic acid are added in order.

For the collodion I have used a mixture of equal parts of 4 per cent. solutions of Schering's celloidin and of a collodion made with Morson's pyroxyline, both in equal parts of ether and alcohol, the same as ordinarily made up in the office for copying maps, but thicker.

SOLUTION II.

| | |
|--------------------------------------|-----------|
| Crystallized nitrate of silver | 80 grams. |
| Distilled water..... | 50 c. c. |

The silver salt is dissolved in the water with heat, and then strong solution of ammonia is added in small portions till the precipitate is redissolved (this takes about 72 to 75 c. c.). 800 c. c. of alcohol, warmed to about 45 degrees C. (113 degrees Fahr.), are then added. This solution should remain clear and colorless. If it turns brown the alcohol is impure. Both solutions can be prepared in daylight.

When Solution II is ready, it is poured in a thin stream into No. I, the latter being well shaken meanwhile. This operation must be performed in a darkroom with orange light. Solution II must be kept heated from 40 to 50 degrees C. (103.5 to 122 degrees Fahr.), otherwise the silver ammonia salt will crystallize out; it is desirable, therefore, to stand the solution from time to time in a water bath heated to the above temperature. The mixing of the above quantity of emulsion should take about ten minutes. The emulsion is well shaken up and tested for acidity. A little of it being poured on glass and wetted with water should show a slightly acid reaction. If alkaline, it is acidified by adding acetic acid drop by drop. It is then well shaken for about a quarter of an hour, and after standing for an hour is poured into five or six times its volume of water. The silver bromide collodion, separated out, is collected in a clean linen cloth, and the ends of the latter being tied so as to form a bag, is washed in running water for about a couple of hours. It is then finally washed with distilled water and spread out upon a thick layer of blotting paper to dry, which takes one or two days. The dry silver bromide collodion can then be kept in black bottles in a dark place for use as required.

I found no difficulty in following Dr. Jonas' instructions, but the mixed emulsion was kept for a day before being washed, with the object of getting greater sensitiveness, and it might possibly be kept even longer with advantage, because I noticed that the unwashed emulsion gained sensitiveness by keeping and also became much more uniform in texture, though thinner. After a week it became very thin.

To make the final emulsion, dissolve—

| | |
|-------------------------------|----------|
| Silver bromide collodion..... | 6 grams. |
| Alcohol | 40 c.c. |
| Ether..... | 60 " |

The sensitiveness of the emulsion is after an hour about one-half degree Warnerke. After twenty-four hours' ripening at 60 to 70 degrees Fahr. it increases about two to

three times, and the color of the silver bromide changes from red-violet to blue-violet.

All chemicals must be perfectly pure and the greatest cleanliness must be observed in all the vessels employed.

The mixed washed emulsions can be kept ready for use; some I prepared about a month ago is now in very good order.

I have found that the emulsion can also be used unwashed with good results. At first it gives rather dense pictures with very clear shadows, but after a few days it is more sensitive and the image not quite so dense and hard; the film also becomes more uniform in texture. After a week, though more sensitive, it gives thin images slightly inclined to fog with para-amidophenol developer and the results obtained with the washed emulsions are certainly better. The unwashed emulsion would probably work well if used within three or four days of being made up and would of course be more economical for work on the large scale.

Dr. Jonas gives very full details about the preparation of the coloring solutions. For coloring the emulsion various dyes of the eosin series, or cyanin, may be used in combination with silver nitrate and alcoholic ammonia. Each 100 c.c. of the emulsion should contain 1.7 milligram of silver nitrate and an equivalent amount of dye, as well as a certain quantity of picrate of ammonia and glycerine. The following solutions are prepared:

I.—EOSIN SOLUTION.

| | |
|-----------------------------|----------|
| Eosin (yellow shade)..... | 4 grams. |
| Alcohol (96 per cent.)..... | 450 c.c. |
| Distilled water..... | 50 " |

If erythrosin is used the proportions are the same.

II.—SILVER SOLUTION.

| | |
|----------------------|------------|
| Silver nitrate | 3.4 grams. |
| Distilled water..... | 50 c.c. |

Strong solution of ammonia is added till the solution is clear and alcohol to make up 200 c. c.

III.—SOLUTION OF AMMONIUM PICRATE.

| | |
|----------------------|----------|
| Picric acid. | 2 grams. |
| Distilled water..... | 10 c.c. |

Ammonia is added to neutralize the acid and then alcohol to make up 300 c.c.

These solutions are used in the following proportions:

| | |
|-----------------------------|---------|
| Solution I. (eosin)..... | 75 c.c. |
| " II..... | 30 " |
| " III..... | 30 " |
| Pure glycerin..... | 20 " |
| Alcohol (96 per cent.)..... | 45 " |

The solution is allowed to settle for a day or two, filtered, and 20 c. c. are added to 100 c. c. of the plain emulsion.

The formula for use with erythrosin differs slightly from the above:

| | |
|-------------------------------|---------|
| Solution I. (erythrosin)..... | 75 c.c. |
| " II..... | 30 " |
| " III..... | 30 " |
| Pure glycerin | 25 " |
| Alcohol (96 per cent.)..... | 120 " |
| Distilled water..... | 20 " |

The muddy solution is allowed to stand for quarter of an hour, and strong ammonia is dropped in till it becomes quite clear; it is then allowed to stand for a day or two, filtered, and is mixed with the emulsion in the same proportion as the above *i. e.*, 20 c.c. to 100 c.c. of emulsion.

After the addition of the coloring solution, the emulsion is well shaken and filtered through cotton wool, and is then ready for use. The colored emulsion keeps good only for one or two days and is best used on the day of preparation. It should, therefore, only be mixed in small quantities as required for use. (Some colored emulsion was found to be absolutely insensitive after a week.)

I have found that the difficulty of keeping the colored emulsion may be obviated by coating the plate with the plain emulsion, either washed or unwashed, then washing it under the tap and flowing over it the colored tincture of eosin or erythrosin diluted to half strength with water. In some cases this may be a more convenient way of working. A solution containing—

| | |
|----------------------------|---------------|
| Erythrosin..... | 1 gram. |
| Silver nitrate..... | 1 “ |
| Picric acid..... | 1 “ |
| Ammonia (sp. g. .880)..... | about 30 c.c. |
| Spirit of wine..... | 500 “ |
| Water..... | 500 “ |

used as a bath has also given very good results.

Dr. Jonas says that emulsions colored with eosin give soft, harmonious negatives, while the erythrosin gives more density and contrast. I have not yet tried eosin, but erythrosin has given me very bright pictures. In trials with wet collodion, made some years ago, I found that cyanosin gave by far the best results, but it does not seem to do so in this process.

In his paper Dr. Jonas has given an account of the spectroscopic behavior of his colored emulsion. It shows the ordinary increase of sensitiveness in the yellow and yellow-green, and on account of the addition of the picrate of ammonia is less sensitive to blue and violet. Observations with the sensitometer show that the eosin or erythrosin stained emulsions containing an excess of silver show about 21 degrees on Warnerke's sensitometer, when exposed for one minute at a distance of about 10 inches from the standard amyl acetate lamp, and are 350 to 400 times as sensitive as a wet collodion plate under the same conditions.

The exposure is about one-third of what would be given with a wet collodion plate and no yellow screen is necessary in copying paintings, etc. I have found that practically the plates coated with washed emulsion colored by the methods described above are about as sensitive as Wratten's "ordinary" plates.

(*To be continued.*)

AMATEUR PHOTOGRAPHY AT THE WORLD'S FAIR.

To the Editors of Anthony's Photographic BULLETIN :

THE matter of an exhibition of photographs to be made by the amateur photographers of the country at the World's Fair seems thus far to have received very little attention. This is more noticeable in view of the large amount of very artistic work produced in the different journals, and at the annual exhibitions of the societies and art clubs of our principal cities. Such an exhibition would attract widespread attention, and would arouse the interest of visitors, both foreign and native, in the artistic natural features of our country. It would only be necessary for the clubs or societies of the large cities to take the matter in hand and announce their willingness to handle and arrange the display from their States, and the work would come in without further invitation. It is not expected that the clubs would necessarily co-operate to form a general exhibit, but the clubs of each State could join hands with the State Commissioners to the World's Fair, and thus form an artistic addition to the State's display.

With a view to unanimity it would be well for the clubs now composing the "Interchange Societies" to take the initiative, and, after maturing plans, to issue a general circular letter through the various journals calling upon the amateurs to correspond with the local organization, which could then forward the necessary information as to size and character of print, and, if it is desirable to have them mounted, the size and kind of card to be used. The limit of time could be set, and the contributors notified that the pictures may be received and selected by a competent committee appointed for the purpose, before handing them over to the Fair Commissioners. The entire exhibition could be made from negatives taken during the past one or two years, of local scenery and objects of interest in the neighborhood of the photographer, thus entailing very little expense other than for albumen paper and card mounts. In the large cities the clubs could divide the work among the members and unattached amateurs desiring to contribute, and thus an exhibition consisting of one hundred or more pictures would be but a light burden on any of the individual contributors. A display of this kind by each State would be of great interest not only to foreign visitors, but to those of our own country, who would in this way become practically acquainted with much that is beautiful and interesting on our continent. So far as it relates to cities it could be made a valuable guide to the most interesting features of the locality it represents. A map of the city could be hung up adjoining, and the buildings and streets photographed, marked in red, in order, for reference. Thus a better idea of the arrangement of the features of note in our municipalities could be given. The time is short, and, if the plan is to be carried out, the work must be done during the coming season. I therefore call upon the amateur fraternity to take up the idea at once. Being worth doing, let it be done well. Let the officers of the clubs consult with the various State Commissioners and arrange the matter, so that early in the spring the different photographic and sporting journals can announce the details, and the work may be in the hands of the Commissioners a year hence.

ROBERT E. M. BAIN.

OUR ILLUSTRATION.

WE are again able to give our readers an illustration as frontispiece to the BULLETIN that is worthy of careful study. Mr. Strauss of St. Louis is a hard and earnest worker for the elevation of the photographic art, and anything coming from his studio will show progress and an effort to reach an ideal in an artistic sense. We are sure the excellent study of child life shown in the illustration given with this issue of our journal will be admired by all who appreciate child life and the efforts of the artist with camera and lens to catch its pleasing phases. The beauty of the prints is largely due to the Aristo paper used and the excellent management of it in Mr. Strauss' studio.

HONORS FOR NEW YORK CAMERA CLUB.

THE New York Camera Club may well feel proud of its members, three of whom received diplomas at the late exhibition of Art Photography in Vienna. The fortunate members were Miss Mary E. Martin, Mr. James L. Breese, and Mr. Harry B. Reid, the hard working Secretary of the Club. The work was judged from a purely artistic standpoint and speaks well for our New York workers.

focusing quite a little distance to and fro without any apparent effect on the sharpness of the image, Mr. Cheyney said that distance was covered by the depth of focus of the lens. An optician had told him that as the blue rays were refracted closer to the lens than the yellow rays, in getting a fine focus always shorten up and then rack out; don't go out and then come in. Thus they would get a finer focus, because, if the eye made a slight error, by this method they would get advantage of the fact that the blue rays which made the picture ran a little closer in.

Mr. Ives stated that lenses might be over or under corrected, and some lenses would have the chemical focus back of the focus of the yellow rays, and others in front. The majority of lenses were supposed to be exactly correct for the center of field, but this was seldom the case. He had had lenses with the chemical focus back of the visual focus. Such lenses used to be quite common some years ago.

Dr. Sharp, referring to the new Jena glass, said that it was used quite extensively in microscopical lenses, and it was far superior in that it did away with a great deal of refraction, gave a flatter and better field, and was much finer for photo-micrography.

Mr. Cheyney said the description of this glass was a great deal like the description of the lenses. The difference between a lens and a pin hole was very slight in their relative rapidity, *i. e.*, if the pin hole had a corresponding ratio to the focal length of the lens to be put there, and the same diaphragm used as the size pin hole represented, the difference in speed was immaterial—it could not be distinguished. If they had a diamond lens it would make no difference. All this glass could do was to give them the power of covering more field sharply. As for the talk about one lens being faster than another, if the holes through which the light passed were of the same relative size to the focal length, there would be no difference in the speed of the two lenses, unless one of them were made of the most abominable glass.

Mr. Carbutt inferred from this that Mr. Cheyney did not believe in Jena glass.

Mr. Cheyney said he did believe in it, but there was no difference in the speed under the conditions he had just mentioned.

Mr. Carbutt begged to differ; he thought there was.

Mr. Ives stated that he thought the whole matter was explained by the fact, not gener-

ally understood, that the ordinary glass used in constructing photographic lenses was practically opaque to some of the violet rays. It might be that the new Jena glass allowed more of the violet rays to which the photographic film is sensitive to pass through it than did the ordinary glass heretofore used.

Mr. Stirling spoke next upon the subject announced by circular—*viz.*, "Recent Appliances for the Optical Lantern." He desired to call the attention of the members to two matters in that connection. They were all familiar with the subject of the telephotographic lenses referred to at the last meeting. As was well known, this consisted merely in the adaptation of the photographic objective and the eye-piece of the old Galilean telescope.

Referring to the application of this principle to photographic lenses recently made by Mr. Dallmeyer, of England, and of Dr. Miethe, of Germany, Mr. Stirling thought it was worthy of record that so long ago as the spring of 1891 the same idea was taken up by a Philadelphia optician, and applied in a slightly different way, though utilizing exactly the same principle. He referred to Mr. Knipe, of Queen & Co.

It occurred to Mr. Knipe by using the amplifier of the microscope back of the objective of the lantern he could increase the power in the hands of the lantern operator. His application for a patent was filed last April, so that if priority for the adaptation of an old principle could be claimed, that honor was certainly due to Mr. Knipe, of Philadelphia. The name given to this adapter was the "multi-focal attachment," his idea being that the use of a double-concave lens back of the objective provided a series of image-producing points, and by adjusting the distance of the lenses, images of various sizes could be thrown upon the screen.

After adjournment, Mr. Stirling gave a practical demonstration of the power of the "multi-focal attachment."

The other matter in connection with the lantern, Mr. Stirling said, was the making and storing of oxygen. Those who have tried the old process of making oxygen as they needed it, and using it from rubber bags, know what an insufferable nuisance it was. The English operators presented rather a contradictory spectacle. In America rubber bags had been almost entirely abandoned, while in England they were still used to a very considerable extent. Within the last year or two, however, a London company has been organized to make

oxygen by a different process from the one heretofore used, and it had been introduced in small steel cylinders, in which the oxygen was compressed up to 1,800 pounds, or 120 atmospheres. These cylinders were now used to a great extent in England, and their portability alone, if there was nothing else to recommend them, was sufficient to insure their favorable consideration, when compared with the cumbersomeness of the cylinders used in this country.

Mr. Stirling here introduced to the members Mr. Charles William James, manager of the New York Oxygen Company.

Mr. James illustrated the use of the steel cylinders or bottles containing oxygen and hydrogen gas, and explained at length the process by which oxygen was made by the company he represented. He was materially aided in this by diagrams thrown upon the screen.

Mr. James stated that the safety devices used in connection with these cylinders were such as to practically preclude all possibility of accident; the smaller sizes were light and could easily be carried under a man's arm, and every cylinder was tested at a pressure of 2 tons to the square inch. The consumption of gas for an ordinary single light lantern would average 5 to 7 cubic feet per hour. The cylinders exhibited contained 40 cubic feet.

Mr. Cheyney exhibited a simple device which he had made, modeled after the new telephotographic lenses. Various slides from negatives with this apparatus were shown upon the screen.

Mr. Redfield called attention to the fact that the perspective in pictures taken with such a lens, while correct for the distance from which they were taken, was not the same as it would be if taken with a lens of the ordinary focus from a point at which the same amount of detail would be plainly visible to the human eye. It was, therefore, as unnatural, in the opposite direction, as the perspective of an object taken at too close quarters, with a lens of wider angle than the eye takes in naturally. While he believed fully in the use of long focus lenses of the ordinary type, and that this lens would undoubtedly be of great value in certain directions, he thought it proved that from an artistic standpoint lenses could be too long as well as too short in focus.

Mr. John R. Clemons showed several plain silver prints toned in ordinary gold solution with the addition of the chloride of aluminum.

The result was a peculiar warm brown tone of great beauty, with very clear whites.

Adjourned. ROBERT S. REDFIELD,
Secretary.

CALIFORNIA CAMERA CLUB.

SECRETARY'S ANNUAL REPORT, MARCH 8, 1892.

To the Board of Directors and Members:

I am pleased herewith to present for your consideration a review of the Club's work from March, 1891, to March, 1892.

During that time the Club has held twelve regular monthly meetings, four special meetings and twenty-five directors' meetings.

Amendments to the Constitution adopted during the year, one, namely:

ARTICLE IX.—Referring to a quorum of the Board of Directors. It was changed from seven to six.

Amendments to the By-laws adopted during the year, two, namely:

One to Section 1.—Referring to subscribing membership, increasing the number to 250; and the other to Section 4, relative to the election of active members.

The financial statement of the Club for the year just ended is as follows:

| | |
|------------------|------------|
| Collections..... | \$3,261 76 |
| Expenses..... | 3,821 21 |

| | |
|--|----------|
| Cash on hand last annual meeting..... | \$499 22 |
| Subscriptions to marine field day..... | 105 50 |
| Collections..... | 3,261 76 |

| | |
|--------------------------|------------|
| Total..... | \$3,866 48 |
| Expenses..... | 3,821 21 |
| Balance cash on hand.... | \$45 27 |

In reference to the above financial statement, I beg to call your attention to the fact that of the moneys expended during the year, \$656.51 was contracted by the previous Board of Directors and paid for during the administration of the present Board. This accordingly would leave the running expenses of the present Board at \$3,164.70, an average monthly expenditure of \$263.75, against an average monthly income of \$270.73 (E. and O. E.).

At the present writing there is due the Club from delinquent members \$285 (E. and O. E.). The expense that the Club will be called upon to bear until the first of next quarter (April 1st) will be about \$200.

In noting the financial statement of the club, I also wish to call your attention to the fact that the income and expenditure of the moneys received from the pay show are not accounted for in my figures.

The club has held during the year two field days, the first of which was a marine day, participating in the reception of President Harrison and the launching of the *Monterey*, April 28, 1891. The expenses of this field day were defrayed entirely by voluntary subscriptions, which amounted to \$105.50. The expenses of this field day were \$98.30; \$75 of which was paid for the use of the tug *Active*. The balance of cash from this field day, \$7.20, was turned in to the treasury. The number of people participating, seventy-five.

The club held another field day on September 9, 1891, in which all the expenses were defrayed by the club, amounting to \$61.30. Number of people participating, thirty. This field day was held at Big Lagoons, in Marin County, and it required three wagonettes to carry those participating.

The club has held during the year just ended twelve regular monthly exhibitions.

The average attendance at the monthly exhibitions has been 1,600, making a total for the year of 19,200.

The amount expended on furnishing the present rooms of the club, \$779.96. This does not include the money taken from the pay exhibition given at the Temple during September.

The club has given during the year the following exhibitions of slides from Eastern Clubs: "Illustrated Boston," May 27, 1891; "Hoboken and Newark Camera Clubs," January 20, 1892; "Photographic Society of Baltimore, Portland (Me.), and Newark," January 26, 1892; "Society of Amateur Photographers of New York," February 2, 1892; "Photographic Society of Philadelphia;" "Joliet Lantern Slide Club;" "Brooklyn Academy of Photography," February 16 and 18, 1892.

The club is a member of three lantern slide interchanges, viz.:

The Boston Camera Club, under the management of W. Garrison Reed, Boston, Mass. The Lantern Slide Interchange of the American Photographic Conference, under the management of Paul L. V. Thiery, Newark, N. J. The American Lantern Slide Interchange, under the management of F. C. Beach, New York.

The club has in circuit at present two sets of slides of the "Yosemite Valley" in the hands of the Boston Camera Club Interchange,

one of which is circulating in the United States, and the other is commencing the circuit of the English camera clubs.

"Picturesque Oddities," such as exhibited for our pay exhibition in September, held at Metropolitan Temple, is in the hands of the Conference Interchange. At present the club has no set of slides for the American Lantern Slide Interchange, F. C. Beach, Manager. This is to be regretted, as it is vitally important that the club should do its share of work for the many benefits received by being a member of this excellent interchange.

The club has elected during the year sixty-seven Active Members, twelve Associate Members, two hundred and fifty Subscribing Members.

The club has accepted resignation from fourteen Active, five Associate, twenty Subscribing.

The club has lost during the year three members by death—Dr. J. N. Blood, George W. Lundborg and William Barton, all Subscribing Members.

Dropped from membership for non-payment of dues—eight Active, five Associate, twenty Subscribing.

At a Directors' Meeting held July 13, 1891, the Board of Directors established an absent list, allowing Active Members who intend leaving the State to be placed upon this list for a period not to exceed six months. At the present time there are two names on this list, J. D. Yost and W. Gerstle.

On the 27th of November the club gave an exhibition at the Metropolitan Temple for the benefit of the S. F. Nursery for Homeless Children. The expenses of this exhibition were defrayed by Mrs. W. R. Eckart, the wife of one of our Active Members, and the exhibition netted that institution some \$300.

On December 17, 1891, in connection with the Congress on Dolls, under the auspices of the *Examiner*, the club participated by giving a lantern slide exhibition at Irving Hall.

On the 26th of February, at the Metropolitan Temple, "Through Japan with a Camera" was exhibited for the benefit of the earthquake sufferers in Japan. This exhibition was also under the auspices of the Camera Club, and netted to the Japanese sufferers something over \$150. This exhibition was given at the suggestion of Mr. William R. Hearst of the *Examiner*, who kindly loaned the slides.

Commencing with August 11, 1891, the Room Committee instituted a number of classes to be held Tuesday and Friday evenings. Mr. J. J. B. Argenti had charge of a

class in micro-photography, four classes. George W. Reed, Developing, two classes. Bromide Contact Printing, E. L. Gifford, four classes. Silver Printing on Albumen Paper, R. J. Waters, two classes.

These classes were a thorough success, though not largely attended, and I would most respectfully suggest to the gentlemen who are likely to compose the Room Committee for the next term that the question of classes be taken in hand, and with proper management it will reap the club a great deal of benefit.

On January 5, 1892, Mr. O. V. Lange commenced a series of three lectures, illustrated, on "Composition, Lines and Masses." The remaining two of these lectures are to be delivered later on.

During the month of August, 1891, the club through the efforts of Mr. E. L. Clifford decided to establish "The American Prize Print Interchange." There are at present belonging to this Interchange the following Camera clubs: Columbus Camera Club, Columbus, O.; Mattapan Camera Club, Mattapan, Mass.; Hawaiian Camera Club, Honolulu, H. I.; New York Camera Club, New York; The Camera Club of Hartford, Hartford, Conn.; Buffalo Camera Club, Buffalo, N. Y.

The details of this interchange I leave in the hands of my esteemed colleague, Mr. E. L. Gifford, who will explain its workings thoroughly in his report on the subject.

I would most respectfully suggest for the consideration of the club that the date of the annual meeting be changed from the March meeting to the April meeting. The object of the change is this, that the quarter commences with April 1st, when our books are balanced and statements made out, and financial matters are arranged for that quarter. At present the annual meeting occurring in March gives us considerable trouble, as our books have to be balanced at the beginning of March instead of at the end of the quarter, and this entails upon the Secretary's office no little work.

Another point is, the change in the directory in the middle of the quarter creates no little confusion and trouble to new officers who are not thoroughly posted in the workings and detail management, and interferes considerably with the regular routine work of the club.

In closing this report, as your Secretary for the year just ended, I take this occasion to publicly express my sincere thanks to the retiring President, George W. Reed, for his able assistance and counsel rendered me dur-

ing the year, and to congratulate him upon the marked success of his management of the Camera Club.

I also wish to express to the individual members of the Board of Directors my thanks for their courteous treatment and indulgence.

S. P. ANDREWS,

Secretary.

CHICAGO LANTERN SLIDE CLUB.

ON Monday evening, February 15th, the clubrooms in the Athenæum were filled to their utmost capacity by the members and their friends to enjoy the collection of interchange slides contributed by the Lantern Society of London, England, and never has it been our good fortune to see better work in our clubrooms.

The Secretary announced that he had received notice from the manager of the Interchange that February was to be our red letter month, as another set would reach us before March 1st.

More than a passing notice of this set is deserved, and it was refreshing to old members to hear the well known names of contributors given as their charming work appeared on the screen.

Fred. H. Evans has a number of beautiful cathedral views, both exterior and interior, including Exeter, Canterbury, Ely and Wells, all of which were fully described by the list accompanying the set.

Then followed some pleasing hedgerow studies, also ferns and flowers, the latter always charming the ladies.

When Mr. Andrew Pringle's name was called we knew something grand would appear. His study of Old Kenilworth Castle elicited applause, and of all the views we have had of the superb old ruins this one pleases most, for he has framed the castle with old trees, silent witnesses of past grandeur history tells of, and carelessly leaning on an old fence was a man as if musing on the past, apparently ignorant of the presence of a photographic outfit.

Mr. Edward G. Lee's wayside studies, combining beautiful landscapes and rare cloud studies, were applauded. Mr. Lee has a happy faculty of finding pretty young people to pose in proper places. His picture titled *The Evening Hour* is to us a reminder of the Old Oaken Bucket, or at least the first lines of the dear old and familiar song.

A. Kapteyn and Walter Clemence showed a number of exquisitely toned slides, titled *Old Holland*, and *Venice in Holland*.

Our members will long remember this evening spent with the Lantern Society of London.

W. A. MORSE,
Secretary.

SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

THE regular meeting of this society was held on the evening of Tuesday, March 8th, Mr. Dayton occupying the chair.

Professor Laudy, briefly introduced by the chairman, gave an interesting and instructive talk on the earliest photographic processes, the Daguerreotype and wet plate. Every amateur should know the general details of these processes, should be familiar with the difficulties which attended the labors of the early workers and should doubly appreciate the fact that he was born in the dry plate period.

Professor Laudy said that in a conversation with a friend somewhat older than himself, that friend had said that as he grew older he liked to reflect on the days of his youth. This was what he proposed doing. The history of photography most of the audience were familiar with. In 1839 Daguerre published an account of his process, and at the same time, or thereabouts, Talbot, of England, published the Talbotype process. Daguerreotypy itself as a practiced art consisted in using a polished silver plate, iodizing this, exposing and developing.

The first plates used in this country were made by rolling out silver dollars, but finally silver was deposited electrolytically on copper plates, thus economizing considerably. The plate was first polished by the "buffer," it being held in a "plate-vice" for this purpose. A well buffed plate was essential and a good buffer was a man to be appreciated. The plate was then placed in the coating box and submitted to the vapor of iodine, this operation going on in a partially darkened room. Thence to a second box for coating and finally to the plate holder. The cameras used were of very rough workmanship. After exposure, development was effected by placing the plate in an iron box and submitting it to the vapor of mercury. Fixing was done in hyposulphite of soda. The plates thus produced, owing to the high surface, were not very distinct and the surface was very delicate. This was remedied by Fizeau's discovery, which consisted in toning the plate with gold. The edges of the daguerreotype were turned

up to form a trough, a mixture of gold and hypo poured on and the plate gently heated.

Eight by ten was probably the largest size used. At this stage several handsome daguerreotypes were passed around and the beauty of some of them called forth much comment.

Dr. Laudy stated that some few years ago a photographer in Brooklyn attempted to revive the daguerreotype process, but, it proving to be a failure, the apparatus came into the possession of Columbia College. The apparatus exhibited was that purchased of the Brooklyn enthusiast and was the identical outfit used by the late Mr. J. B. Gardiner. The different styles of cases, mats, glasses and preservers were commented on, and what is probably the last daguerreotype made in this country was exhibited. This was made in the Cooper Union at a lecture delivered by Dr. Chandler. The Professor said that daguerreotypy may be considered as a lost art. There was no method of duplication except by repeated sittings.

In 1846 Schonbein discovered that ordinary cotton soaked in a mixture of sulphuric and nitric acids became explosive and differed greatly in properties.

In 1847 Maynard found that this gun-cotton was soluble in a mixture of ether and alcohol, and thus prepared collodion.

In 1851 Scott-Archer suggested the idea of iodizing this collodion and sensitizing it in silver nitrate, giving us, in fact, the wet plate process. Melanotypes, ambrotypes and ferro-types became the rage, fortunes being made out of the now despised ferrotype. After a short description of the wet plate process the Professor advised all who did not understand this process to leave it alone and to use their best efforts to succeed with the dry plate. Wet plates were now only used for economy.

A series of slides, some on dry plates and others on wet, were thrown on the screen, and the opinions as to which were wet and which dry were very diversified. A complete set of daguerreotype materials was exhibited, the plates, buffers, coating-box, plate roller, iron developing-box and cameras being shown. Among the latter was the stereoscopic box used by Mr. H. T. Anthony in 1860.

A hearty vote of thanks was accorded to Dr. Laudy.

Mr. Beach exhibited a Rochester camera, and read a communication from the California Camera Club thanking the Society for the treat afforded them by New York's contribution to the Lantern Slide Interchange. Over 1,600 Californians had attended the exhibi-

tion. Mr. Beach also read a communication from the World's Fair Committee with reference to the admission of cameras to the grounds. The matter was still in abeyance, but Mr. Beach trusted that the societies would unite and secure for themselves the privilege of using the camera in the exhibition enclosures. The meeting adjourned at about 10 o'clock.

AMERICAN INSTITUTE—PHOTOGRAPHIC SECTION.

DESPITE the junior blizzard that visited New York on Tuesday, March 1st, an audience of unusual size attended the monthly meeting of the above section. The notifications sent out by the industrious Secretary bore on them the magic name, Elmendorf. It is the custom of Professor Elmendorf to spend his summers, or part of them, in Europe, and it is also his custom to give the section the benefit of his travels by way of an exhibition of lantern slides made by himself from his negatives.

There is something peculiar about Professor Elmendorf's slides and his exhibitions. A poor slide never appears on the screen, a great exception to the general run of exhibitions. All the slides are intensely interesting, very picturesque and artistic, and are colored in a manner which seems to belong peculiarly to Mr. Elmendorf. Take for example the slide, "A Holland Farmhouse." No slide in black and white could adequately convey to the audience the rural beauty of the cottage and its surroundings. But the Professor's slide shows us a red-tiled cottage covered with a green creeper out of whose leaves the red blossoms peep. The whole subject is perfectly balanced, the colors applied by the hand of the master, and the resulting picture one that an artist could not hope to equal for truth. Mr. Elmendorf's reputation sufficed to call out a host of people, and his unique collection of slides and happy method of description made for him a warm corner in the heart of every one present.

The Chairman called for order at 8.05 o'clock and called on the Secretary for "Communications."

Mr. Mason announced the receipt of numbers of the *Eye* and *Times* and of a bound copy of Anthony's *BULLETIN* of 1891. A vote of thanks was accorded for these voluntary contributions.

At the suggestion of Mr. Newton the Outing and Dinner Committee, having performed its functions, was discharged. Mr. Newton stated that members would find a full account of the dinner and the after-talk in Anthony's *BULLETIN*, that journal having made a special and full report.

The Secretary announced that at the meeting on June 5th, the section would be entertained and instructed by a lady who held a unique place in art and literature, Miss Catharine Weed Barnes.

Mr. Newton having introduced Professor Elmendorf in a few words, a touch of a switch started the electric lantern, and the audience were carried through Holland, along the Rhine to Nuremberg and over the Alps to Monte Rosa.

The opening slides included a parting view of New York Harbor and a fine picture of the waves in mid-ocean. Thence to Holland, where were seen several views of the canals, the level of the water in some of these being 20 feet below that of the North Sea. Views of the "mountains" of Holland showed flat plains devoid almost of any undulation and dotted by the trademark of Holland—the wind-mills. A picture of one of these mills, with the sails in full motion, furnished a good test for the Professor's shutter. Cologne cathedral with its majestic spires and its interesting front was peeped at, and then by a jump the noble ruin—the Drachenfels. Views of the Rhine from this point showed comparatively uninteresting landscape, but on reaching Coblenz the Professor showed what beauties were to be found. Putting his audience in imagination on a little steamer and steaming slowly up, the ruins of Stolzenfels were the first point of interest. Thence to the Castle of Marksburg, built in 1430 and in excellent preservation, on to the Rheinfels, the largest ruin on the Rhine. Then to Rhine falls, a magnificent waterfall, of which Mr. Elmendorf had a magnificent picture. Then to Heidelberg, a town replete with interest. Hence to Nuremberg, of Faust and Marguerite fame. Views of the River Pegnitz received much applause and here the journey home began by way of the mountains. It is futile to attempt description of Mr. Elmendorf's pictures of the Alps. They are simply unique and appealed very strongly to the audience. Such an evening has rarely been spent in the rooms of the section, and the very hearty ovation accorded to Professor Elmendorf was a good indication of the feeling of all present.

THE PHOTOGRAPHIC SOCIETY OF KANSAS CITY.

THE second semi-annual election of officers of the Photographic Society of Kansas City was held at the studio-rooms on the evening of March 23d. All the members were present, and, after the usual routine business had been disposed of, the election of officers was held, resulting in the re-election of the present incumbents, as follows: President, J. P. Reymond; Vice-President, Dr. S. T. Stark; Secretary and Treasurer, C. H. Clarke; Assistant Secretary, L. D. Arnold; Executive Committee, President Reymond, Vice-President Stark and Secretary Clarke. A number of important improvements in the studio were suggested and agreed upon, and will be made at once.

This society is now in a flourishing condition, holds regular meetings for the transaction of business on the fourth Wednesday of each month, and holds special meetings for entertainment and the discussion of photographic matters on the evening of the second Wednesday in each month. During the coming spring and summer the members of the society expect to take great interest in photographic work, and the studio will doubtless be crowded with enthusiastic workers most of the time.

C. H. CLARKE,
Secretary.

THE COLORADO CAMERA CLUB.

A MOST successful and enjoyable reception and house-warming was given by the Colorado Camera Club, at their new clubrooms, on Tuesday evening, March 8th.

A very creditable exhibition of pictures, by the members, filled the walls of the reception-room. Among the best work displayed were some very fine panoramic photographs by W. H. Jackson, which were greatly admired.

The microscopic work by Prof. Hart proved very interesting. R. M. Davis, W. E. Perkins, C. C. Candy and others had attractive displays.

After the visitors had inspected the exhibition of photographs, a lantern exhibition was given in the large operating-room.

W. E. Miles was the lecturer of the evening, and Prof. Hart managed the stereopticon. An orchestra provided music during the evening, and the three hundred guests departed at eleven o'clock, after a most enjoyable entertainment.

The clubhouse was originally built for a

photographic studio, and is therefore particularly well adapted for the purposes of a photographic society, as there is a large and well equipped darkroom, a good large operating-room, with north light, large printing and bromide enlarging rooms.

Visitors can obtain cards entitling them to the privileges of the club by applying to the writer.

H. S. BELLSMITH,
Corresponding Secretary.

"THE GREAT EARTHQUAKE IN JAPAN, 1891."

THE work which we were promised by Professors Milne and Burton on the terrible earthquake of last October, is now in the hands of the public. It is a noble volume, printed in luxurious type, on paper of the finest quality, and illustrated by no less than twenty-nine large plates. We doubt whether any volume of such a sumptuous character was ever before compiled and printed within so brief a period of the event it describes. Two months sufficed to collect materials for, illustrate, put into type, and bind a book that might reasonably have been the product of three or four times that interval. Doubtless this remarkable promptness will bring its reward. Public interest in the great earthquake has not yet begun to subside, and every one will be anxious to have a copy of a volume conveying such a vivid impression of the appalling phenomenon. Nor will there be much difficulty in gratifying that desire, for the book has been issued at the remarkably cheap price of six *yen* to subscribers, and seven and a half *yen* to the general public. How any margin of profit is left by such figures, we find difficulty in conceiving. The twenty-nine photographs, if purchased separately, would not be dear at five *yen*; the binding, which is handsome and solid, must have cost about a *yen*. What then remains for the printing and paper, to say nothing of booksellers' commission or of remuneration to the authors? However, if Professors Milne and Burton can afford to give us such a book at such a price, we have only to be grateful to them. Professor Milne's letter-press occupies ten pages. Into that short space he has managed to compress a great mass of useful information about earthquakes in general and the Ai-Gi catastrophe in particular. It is interesting to note that the great disturbance, which was destructively felt throughout an area of 4,400 square miles, which made itself plainly perceptible over an extent of 92,000 square miles, and which

would have shaken an area of about 400,000 square miles had Japan been surrounded by land instead of water, had its origin in "a basin of paleozoic hills, where there are neither volcanoes nor volcanic rocks." Yet the bed of alluvium filling that basin has frequently been visited by severe shocks. "In 1826, 1827 and 1859 violent disturbances took place there; many ordinary dwellings, store-houses, and even mountains suffered; people and animals were killed; rivers were stopped up and floods occasioned." During recent years the records seem to indicate a gradually increasing frequency of shocks, culminating in the great shake of last October. Thus, the numbers of shocks recorded in the district during the six years 1885-90 were 9, 4, 10, 12, 15 and 36, respectively. These were all sufficiently severe to be observed and placed on record by ordinary means. In immediate and alarming proximity to this statement, Professor Milne gives the accurate records taken with seismographs in Tokyo during the same years, the numbers being 51, 55, 80, 101, 115 and 93. Happily the capital seems to have entered the downward grade without experiencing any stupendous calamity like that which capped the growing frequency of the Ai-Gi disturbances. With regard to the plates in this handsome volume, it is, perhaps, sufficient to say that they are photographs taken, for the most part, by Professor Burton and reproduced by Mr. Ogawa. Their execution at such hands is necessarily excellent, and we may add that the scenes chosen convey a vivid idea of the great calamity and all its concomitant features. The authors declare that the photographs are "really permanent, in the sense that they will not fade in any length of time." Accompanying each picture is a short description which conveys all the information required for a full understanding of the scene.—From the *Japan Daily Mail*, January 18th.

RULES, ETC., FOR PITTSBURGH AMATEUR PHOTOGRAPHERS' SOCIETY, SIXTH ANNUAL EXHIBITION.

AMATEUR photographers are invited to send specimens of their work for competition in accordance with the rules given below.

A diploma will be awarded by a Board of Judges for the best picture in each class.

The exhibition will commence Tuesday evening, May 10, 1892, and remain open until Thursday evening, May 12.

RULES.

1. Competition for the special awards is open only to members of the society.

2. No photographs will be received on single mounts less than 5 x 8 inches. All smaller than this size must be grouped on a larger mount, for convenience in mounting. No unmounted prints will be received.

3. The same picture may be entered in one class only.

The committee reserve the right to reject all or portions of any exhibit offered.

4. All entries must be made at least three days in advance of the exhibition, giving (when possible) the following information :

Number of pictures, size of frame or mount, classification, subject, lens, plate, exhibitor.

5. Each print must have a label attached by the exhibitor, so as to be read from the front, stating class, subject, lens, plate, exhibitor. Blank labels will be furnished on application.

6. All pictures intended for exhibition must be delivered at the society rooms not later than three days prior to the opening of the exhibition. Pictures received after the date mentioned cannot be entered for competition.

7. All expenses for transportation to the exhibition must be prepaid by the exhibitors. Return charges will be collected by carriers.

8. No pictures to be withdrawn before the close of the exhibition.

9. The society will not be responsible for any loss or damage that may occur to any exhibit, but will use all reasonable care to prevent such occurrence.

10. In competing for special awards, excepting awards B and C, the work must be absolutely that of the competitor, both as to developing negative and making print.

SPECIAL AWARDS.

Award A.—The Darlington gold medal offered for the most artistic picture. Members competing for this medal must submit their picture sealed, their name and address accompanying same in separate envelope.

Award B.—Mr. L. S. Clarke offers a gold medal for the best set of six pictures telling a story.

Award C.—Mr. Horace R. Moorhead, offers a cash prize of \$25 for the best general exhibit. The exhibit to be judged both from a photographic and artistic standpoint.

Award D.—Mr. John W. Morrison offers one 5 x 8 Universal Camera and holder for best picture in special composition. The competitors for this prize must certify that the

negative has been made within the past four months, and that the entire work of exposure, development, printing and toning is their own; prints to be made on albumenized paper. Negative and print 5 x 7.

Award E.—Mr. W. S. Bell offers a gold medal for the best transparency, negative and positive to be placed on exhibition. All work must be that of competitor.

Award F.—The Eastman Company offers a "C Ordinary Kodak" for the best collection of not less than six Kodak pictures, any size. The prize prints to be presented to The Eastman Company, with the privilege of reproducing them.

CLASSIFICATION.

1. Landscapes, 5 x 7 and under. 2. Landscapes, 5 x 8 and over. 3. Marine views, surf and sail. 4. Single figures 5 x 7 and under. 5. Single figures 5 x 8 and over. 6. Groups, 5 x 7 and under. 7. Groups, 5 x 8 and over. 8. Special compositions. 9. Animals. 10. Flowers, fruit and trees. 11. Snow and ice. 12. Architecture. 13. Interiors. 14. Sculpture. 15. Machinery and other manufactured objects. 16. Enlargements. 17. Flash light. 18. Bromide prints. 19. Platinotype prints. 20. Transparencies. 21. Set of six lantern slides. 22. Blue prints. 23. Instantaneous effect. 24. Best collection of hand camera pictures.

Committee of Arrangements.—W. J. Hunter, T. K. Gray, J. H. Hunter.

Bibliography.

GUIDE PRATIQUE POUR L'EMPLOI DU PAPIER ALBUMENÉ. Par L. Mathet. Paris: Société Générale d'Éditions, 1891.

From the preparation of the sensitized paper, through the printing, toning, fixing, washing, mounting and varnishing, to the finished print, in all its beauty and completeness, this little volume carries us ably and in a most interesting manner. None are so perfect but some of the hints found in its 78 pages will find a weak spot somewhere in their armor, and to all we heartily commend this little volume.

LES TRAVAUX DE L'AMATEUR PHOTOGRAPHIE EN HIVER. Par É. Chable. Paris: Gauthier-Villars et Fils, 1891.

To indicate to the amateur photographer the most practical, as well as the most economical manner, with the apparatus he already possesses, of producing enlargements, stereoscopic views, transparencies, lantern

slides, and all the other "winter productions" of his art, is the task that M. Chable has set before himself and accomplished. In saying that he has accomplished his object we are only truthfully stating the conclusion that any conscientious reader of the 200 pages of this book will come to.

ÉLÉMENTS DE PHOTOGRAMMÉTRIE. Par Le Commandant V. Légros. Paris: Société D'Éditions Scientifiques, 1892.

This work is somewhat of a classic and treats of the strictly scientific application of photography to architecture, topography, scientific observations and military operations. The difficulties to be met with and overcome in these applications of the art are fully and ably discussed and to the scientist this work is a valuable one. It is somewhat heavy, perhaps, but the author makes no pretensions toward having produced a work of a popular character. It opens with a chapter of generalities and definitions, followed by chapters on perspective, general problems of perspective, and photogrammetry method of intersections, the fundamental problem of photogrammetry and its application to the experimental researches of the physiological station.

DIE AUTOTYPIE. Von J. O. Mörch. Düsseldorf: Ed. Liesegang's Verlag, 1891.

This is a thoroughly practical treatise of the varying applications of photo-mechanical printing. Starting from the copying of the original picture or negative, it carries the reader through the various stages down to the finished production, of which some very good illustrations are given, the girl bearing the water pitcher being an especially noteworthy one. The work is a 12mo of 128 pages and will prove of much value to the practical worker.

We are in receipt of a bound volume of H. P. ROBINSON'S "PICTORIAL EFFECT IN PHOTOGRAPHY," Scovill and Adams Co., New York, 1892.

It is an admirable volume, well bound, and printed on excellent paper. Some of the illustrations are especially noticeable and well executed. We are pleased to be able to add it to our library.

DIE PHOTOGRAPHIE MIT BROMSILBERGELATINE UND DIE PRAXIS DER MOMENT-PHOTOGRAPHIE, von Ludwig David and Charles Scolik. Halle a. s., verlag von Wilhelm Knapp, 1892.

If permitted, we should like to use the term "popular classic" in describing this most

admirable work. It is a thoroughly exhaustive treatise on the practice of instantaneous photography, in which the interest of the reader and student is fascinated and held from beginning to end. The subject matter is well arranged and well written, and 500 pages of it is none too much. The reader's interest is first aroused by showing him what can and has been done in the way of photographs of swiftly moving objects, from a man in motion to a cannon projectile, then showing him how to do it and what to do it with, involving of course a wide discussion of apparatus and lenses. Cameras, plate holders and supports fill one part—objectives another. Shutters; methods of measuring quick exposure times; determining the correct exposure; finders; illumination of the object; treatment of the negatives; the proper exhibition of consecutive exposures; the stroboscope; the various applications of instantaneous photography; hand cameras; stereoscopic hand cameras; the testing of hand cameras; data concerning all known hand cameras; supplement.

The illustrations are of a high grade and admirably suited to the work, which is one we are very glad to add to our library.

ANLEITUNG ZUR PHOTOGRAPHIE FÜR ANFÄNGER, von G. Pizzighelli, 4 Auflage, Halle A. S., verlag von Wilhelm Knapp, 1892.

This is a handy little pocket manual (Fourth Edition) of photography of some 300 small 12mo pages and contains many valuable tables and formulas.

The ground gone over is thoroughly and ably discussed, beginning with the apparatus necessary down to the final production of the perfect picture.

The cuts are numerous and well executed, and both print and paper are excellent.

GUIDE PRATIQUE POUR L'EMPLOI DES SURFACES ORTHOCHROMATIQUES. Par L. Mathet. Paris: Société Générale d'Éditions, 1892.

A plea for the use of orthochromatic plates is not needed for those who have once used them, but for their unenlightened confrères the eighty pages of this little work will be full of interest and the comparison of results obtainable as shown by the prints it contains is sufficiently vivid to convince the most skeptical. The precautions necessary in handling these kind of plates is discussed, together with the different modes of preparing them, the coloring matters used, determination of their sensi-

bility toward different colors, and the methods of exposure and development.

THE OPTICS OF PHOTOGRAPHY AND PHOTOGRAPHIC LENSES, by J. Traill Taylor. London: Whittaker and Co. New York: E. & H. T. Anthony & Co. 1892.

There has been a long felt need for just such a work as this in the field of photographic optics and those of us who are acquainted with the author's numerous other productions do not need to be told that he has ably filled it. There is far too much ignorance among photographers in regard to the principles and construction of their lenses, and a perusal of the 200 pages of this small volume will go far toward dispelling most of it.

The work commences by defining photographic optics, nature and properties of light, photographic definition, aberration, the various kinds of lenses and the principles involved in their construction, faults of lenses, their adjustment and deterioration, testing of lenses, refinements of focusing, lenses of Jena glass, grinding, cementing, mounting, photo-telescopic lenses—in short, a concise, thorough, able and masterly treatment of the entire subject. The book itself is well printed, well illustrated and well bound, and will be found a well-spring of information to amateur and professional alike.

PHOTO-ENGRAVING, by Carl Schraubstadter, Jr. C. Schraubstadter, Jr., St. Louis, 1892.

This is a thoroughly practical and valuable work on the different methods of photo-engraving. It is an octavo of 125 pages, well printed and fully illustrated, and all the different procedures are treated in detail.

It is fittingly commenced by an historical sketch, followed by chapters on The Arrangement of the Shop, Preparation and Manipulation of Chemicals, Defective Negatives, The Print on Zinc, Powdering and Etching, Gumming Up, Routing and Finishing, Printing with Asphaltum, Half Tone, Miscellaneous Hints, Double Wash-out Gelatine Engraving, Single Wash-out Methods, and Swelled Gelatine Engraving. Altogether, it is a work which we are pleased to have in our library and from which much valuable information can be gleaned.

JEWELER—"This clock will go twelve months without winding."

CUSTOMER—"Well, how long will it go if it is wound?"

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. Correspondents will please remember this. No attention will be paid to anonymous communications.

Q.—F. D. C. writes: Could you give to the Camera Club of Newark the address and if possible the rules of the Lantern Slide Exchange, whose full title I have not the means of knowing just now?

A.—We presume you mean the American Lantern Slide Interchange. We are not in possession of the rules, or would gladly send them to you. We would advise you to write to the manager, F. C. Beach, 361 Broadway, New York City.

Q.—E. F. B. writes: Do you know of any good ferrotype dry plates, and if so, can you give me any idea as to their development, manipulation, etc?

A.—Since answering your last we find that our publishers keep in stock the so-called "Argentic Dry Plates," manufactured by the American Dry Plate Co., and that wherever used they had given good satisfaction. There are certain points in their manipulation that must be borne in mind, however, to insure successful handling of them. Always give full exposure and have the lighting as brilliant as possible. Develop slowly, so that entire picture comes up gradually and uniformly over the plate. The image before fixing should appear weak, be of yellow tone, full of detail but without density, like a weak and over-timed negative, in order to secure best results. Develop with pyro, using a rather dilute solution containing as little pyro as possible. Wash and fix in either a hypo or cyanide fixing solution, allowing the picture to remain until the whites are clear; wash thoroughly, dry and varnish. These plates are considerably quicker than the wet plates and possess in our opinion considerable advantages over them.

Q.—C. K. writes: Enclosed you will find a sample of my work. If you think it worthy I would feel proud to see it in the BULLETIN, as I am a subscriber. I have a Dallmeyer lens, 3B. I have had only about one month's practice. What do you think of my work?

Please let me know through the BULLETIN how to develop a portrait made with a white background. The faces are always dark and do not clear up when finished.

A.—The picture you send is a very creditable one, but hardly suitable for our purposes. In developing the picture you mention, but little pyro should be used, in order to avoid making the contrasts too great and securing a mass of white background so dense as to require long printing, resulting in the dark faces you complain of. The lighting is perhaps a more important question than the developing. The face should be brilliantly lighted and the background placed at such an angle as to prevent direct reflection into the camera. A transparent white background, such as a lace curtain, is often successfully employed in this connection.

Q.—W. C. C. writes: In looking over a file of old BULLETINS, I found a picture of Pike's Peak, Rocky Mountains, printed on N. P. A. extra brilliant paper. As I am using that kind of paper and do not think I get as good results as I should, I write to ask you about it. I keep my silver bath from 60 to 70 degrees by hydrometer test, neutralize when necessary with sal-soda and use no alcohol or ammonia. I float my paper until it lies perfectly flat, keeping the bath in motion while floating, pour back the unused solution into a bottle and hang in the sun until needed again. For silvering, I use a wooden tray waxed inside, draw the paper over a glass rod, dry between blotters and fume when properly dry with ammonia for one hour.

I print until the high lights are slightly colored, wash in five waters and tone in the following bath:

| | |
|-----------------------|------------|
| Chloride of gold..... | 15 grs. |
| Bicarb. of soda..... | 5 " |
| Acetate of soda..... | 5 " |
| Salt..... | 3 " |
| Water..... | 10 ounces. |

Keep bath slightly alkaline and add small quantities of the ingredients each time it is used; do not filter my bath. Fix in hypo solution, add salt after fixing and then wash over night. On mounting my prints seem to be dull. I do not tone too far. I am a traveling photographer and put my paper after printing all night between the same blotters that I use after sensitizing.

I see in Anthony's catalogue a universal finder. I need something of the kind in taking children's pictures. After getting them in

focus on the ground glass they often move before I can get my plate holder in position. I want something that will focus when my plate holder is in place. Will this finder do it? Is the silver ink made for spotting out ferrotypes for making white spots black or black spots white? My photos seem to have fine cracks on the surface after burnishing and often have yellow or white spots after mounting. What can I use to retouch or take them off with?

A.—It is almost impossible without seeing some of your prints to form an idea of your trouble. If you will send us several we will do our best to set you right in your difficulty. We should decidedly condemn, however, the practice of putting your prints before toning between the blotters used in drying your sensitized paper, and think your trouble may lie right there. Use fresh clean blotters and see if the change is not a beneficial one. Above all, remember that cleanliness is absolutely essential to success in printing. In other respects your procedure seems to be all right, although we think the best results are obtainable by the use of a fresh toning bath each time. If you can procure a slide which will hold both plate holder and ground glass at the same time, side by side, a simple side movement of a few inches would serve to bring the plate in position, and we think this could ordinarily be done quickly enough to meet your wants. The finder you refer to would not answer for this purpose. The silver ink gives a white spot on a black ground. Fine cracks on the surface of the picture are often caused by allowing the paper to become too dry before printing. Washing in running water would probably lessen the number of yellow spots appearing in your pictures, and we would advise you by all means to try it.

Views Caught with the Drop Shutter.

Mr. B. L. H. DABBS, the well known photographer of Pittsburgh, was badly injured in a street car accident which took place at the corner of South Highland and Ellsworth avenues a short time ago. Through a mistake in the signals the car collided with a sweeper, and Mr. Dabbs was thrown against the stove, his nose broken, and his face cut so badly as to disfigure him for life. Several other passengers were less seriously injured, and traffic was delayed for several hours. Mrs. Dabbs, who was with him, escaped, we are glad to learn, without serious injury.

THE crop of crayon swindlers is large this month. One of the most enterprising of the craft has been working in Newark, N. J., where he goes to the house in the absence of the male members of the family, and promises to make a crayon picture from a photograph at reduced rates. Before beginning the work he would ask for a deposit of \$1 or \$2 as the case might be, and would then disappear from that neighborhood for all time. The promised portraits never came.

MRS. CUSICK, of 501 South Sixth Street, St. Louis, Mo., was enticed into paying \$1.75 to a man who in return promised to send an enlargement of a photograph, and who represented himself as the agent for a New York Portrait Co. The enlargement and the small picture were to be sent in two weeks. A few days ago she received the small picture by mail without any explanation. She waited several days and then complained to the police, who after a few days arrested the man known as William Remmart. A number of pictures were found in his possession when arrested, and he subsequently confessed to having pursued this method for several months and swindling hundreds of people, who, considering the smallness of the amount involved, would not trouble to prosecute him.

TWO men have lately canvassed the town of St. Johnsbury, Vt., claiming to represent a portrait concern in New York. They induced several of the inhabitants to surrender photographs and a deposit of fifty cents in each case, for which they were to receive elegant crayon portraits. Shortly after the victims received packages by express, charges unpaid, containing the original photograph but no enlargement.

A SHORT time ago, Mrs. Charles J. Valentine, of Newark, N. J., offered a \$20 bill in payment of a deposit on an order obtained from her by an agent of a Photograph and Studio Co., who could not change it, but who offered to procure the change for her. She finally accepted his offer and sent her little daughter out with him to bring back the change. The agent walked down the street till he came to a saloon, outside of which he told the little girl to wait, while he procured the change. She finally went inside to see what kept him so long and on inquiry found that he had made his escape through the side door.

Up to the present the police have been able to find no trace of him.

A FIRE in Beaumont, Jefferson County, Texas, caused a loss of over a thousand dollars to Mr. H. W. BAXTER, a prominent photographer of that place. The loss was only partly covered by insurance. It is thought that the fire originated from a box of ashes left in the cellar by the janitor of the building.

We learn with deep regret of the death of CHARLES BURWELL DOUGLAS, who for upward of forty years has conducted a studio on Fulton street, Brooklyn, N. Y. Mr. DOUGLAS was a Canadian by birth, had been twice married, and had probably been in the photographic business longer than any other person in that city. His illness was but a short one and his demise unexpected.

SINCE January 21st, W. L. BRADLEY, a photographer, of No. 14 Hanover street, Boston, Mass., has been missing. On that date he started for Lynn to attend to some business and has not been since seen at his studio. Mr. BRADLEY is a vigorous man, 72 years of age, 5 feet 8 inches tall, and weighs in the neighborhood of 150 pounds, long black hair and moustache, white perfect teeth and smooth and rather thin face. It is understood that he was seen to leave Lynn on the 23d for the South, which he had contemplated visiting for some time past.

We take pleasure in noting the useful device of H. C. Lavette in the shape of a photograph

envelope for mailing single cabinet prints. It consists of two pieces of cardboard the size of the print, so disposed in an envelope as to render its safe mailing an easy task. The envelope is provided with gummed flaps, which, when stuck down, securely hold the photograph in place. We consider it a decided advance upon anything that we have heretofore seen for this purpose.

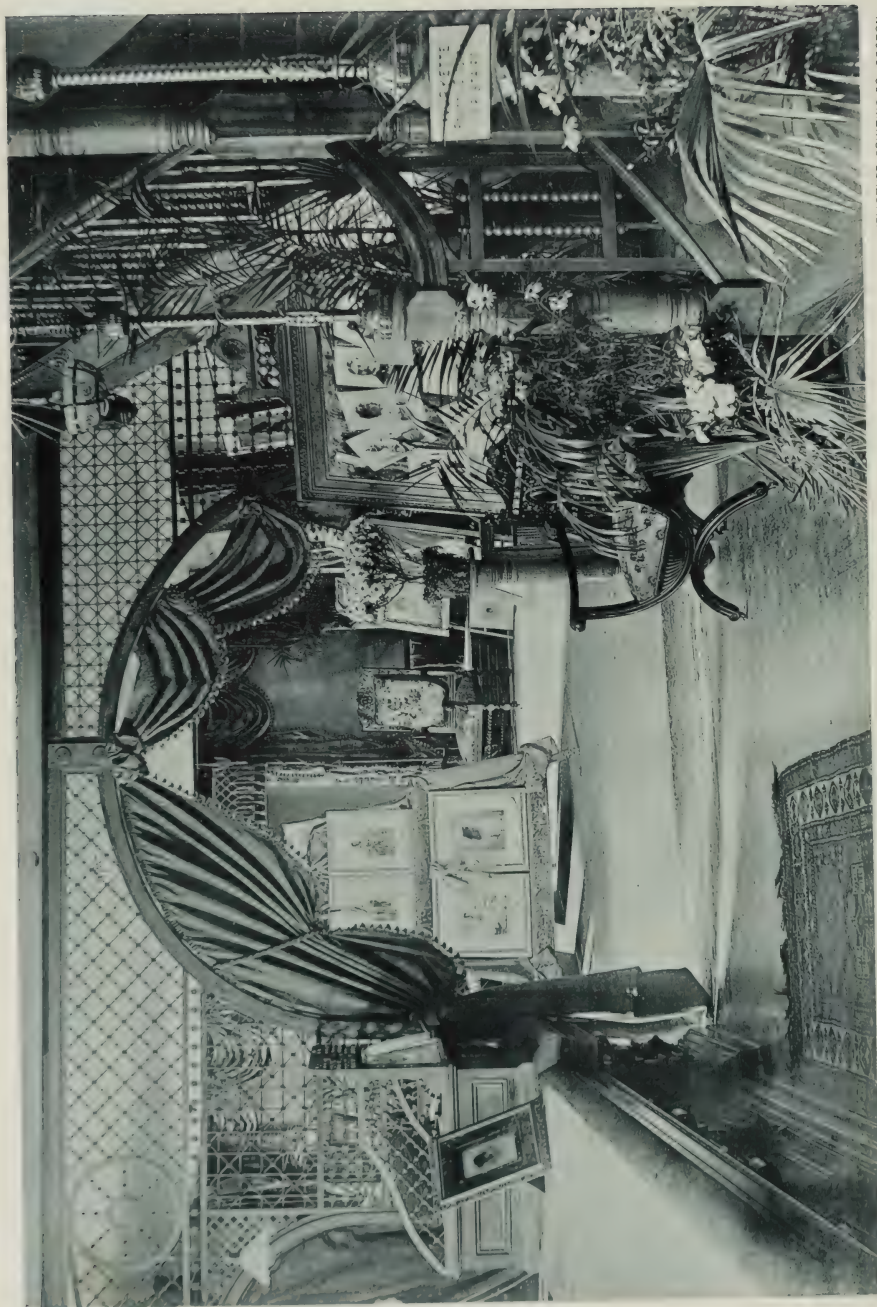
DURING a recent visit to the Pacific Coast, Mr. George A. Ayres, of the house of our publishers, secured from an old sailor a cane made from the backbone of a shark, which he forwarded to New York, with orders to have it specially polished and mounted with an elegant sterling silver head.

ON February 12th a party of gentlemen, consisting of G. Cramer, G. A. Ayers, J. C. Strauss, W. O. Wood, F. W. Guerin, J. C. Somerville and I. Mead, dropped into a prominent restaurant in St. Louis for a little supper. Ayres had the above mentioned cane under his coat, and at the proper time handed it to Mr. Cramer, with a presentation speech that fairly took his (Cramer's) breath away.

S. L. STEIN, C. H. Hamilton and Thomas Shannon have incorporated the S. L. STEIN PUBLISHING COMPANY, in Milwaukee, Wis., to illustrate the principal cities in this country and in Canada, and also for the purpose of engraving, printing and publishing books, views and photographs. The capital stock of the company is placed at \$10,000.

TABLE OF CONTENTS.

| | PAGE | | PAGE |
|--|------|---|------|
| AMATEUR PHOTOGRAPHY AT THE WORLD'S FAIR, <i>by Robert E. M. Bain</i> | 209 | RULES, ETC., FOR PITTSBURGH AMA- TEUR PHOTOGRAPHERS' SOCIETY, SIXTH ANNUAL EXHIBITION..... | 219 |
| AMERICAN INSTITUTE—PHOTOGRAPHIC SECTION..... | 217 | SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK..... | 216 |
| BIBLIOGRAPHY..... | 220 | THE CHEMISTRY OF THE METALS OF THE GOLD CLASS AND THEIR SALTS, AND THEIR BEHAVIOR IN PHOTOGRAPHY (continued), <i>by P. C. Duchochois</i> | 203 |
| CALIFORNIA CAMERA CLUB..... | 213 | THE COLORADO CAMERA CLUB..... | 218 |
| CHICAGO LANTERN SLIDE CLUB..... | 215 | "THE GREAT EARTHQUAKE IN JAPAN, 1891,"..... | 218 |
| EDITORIAL NOTES..... | 196 | THE PHOTOGRAPHIC SOCIETY OF KAN- SAS CITY..... | 218 |
| ENGLISH NOTES, <i>by Talbot Archer</i> | 198 | THE PHOTOGRAPHIC SOCIETY OF PHIL- ADELPHIA..... | 211 |
| HONORS FOR NEW YORK CAMERA CLUB..... | 210 | VIEWS CAUGHT WITH THE DROP SHUT- TER..... | 223 |
| LETTER FROM GERMANY, <i>by Dr. H. W. Fogel</i> | 201 | WHAT OUR FRIENDS WOULD LIKE TO KNOW..... | 222 |
| NEW YORK CAMERA CLUB EXHIBITION..... | 193 | | |
| NOTES ON SOME NEW RAPID ORTHO- CHROMATIC COLLodio-BROMIDE EMULSION PROCESSES, <i>by Colonel J. Waterhouse, S. C.</i> | 206 | | |
| OUR ILLUSTRATION..... | 210 | | |



DANA'S NEW BROOKLYN STUDIO.

ANTHONY'S

Photographic Bulletin.

EDITORS :

PROF. CHARLES F. CHANDLER, PH.D., LL.D.

PROF. ARTHUR H. ELLIOTT, PH.D., F.C.S.

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No. 8.

MR. IVES' POLYCHROMATIC LANTERN SLIDES.

At a recent exhibition of the New York Camera Club, Mr. Fred E. Ives, the well known worker in color photography, showed a collection of lantern slides made by him embracing a series of very fine views of scenery in and around Yellowstone Park.

Involving, as does his method, the application of certain principles upon which he has been at work for some years past, we do not hesitate to say that the success achieved by him is unprecedented in this line of work.

It is very difficult to give any adequate idea to the general reader of the peculiar application of chromatic principles involved in this new development of color work in lantern slides without being either too technical or too scientific.

Mr. Ives' discovery involves the application of Clerk-Maxwell's principles of the fundamental color sensations to which the human retina is sensitive. In other words, not only the truly red rays, but quite a number of other rays in the red and yellow part of the spectrum, produce the sensation of red upon the retina of the eye.

In the same manner a large number of the orange and green rays, together with those of a purely yellow color, produce the sensation of yellow upon the human retina. In the violet portion of the spectrum rays all the way from the green into the deep violet produce the blue sensation.

Working upon these principles, Mr. Ives has invented a method, that without the application of pigments or any coloring matters whatsoever applied in detail to the pictures, he is able to project upon a screen views and pictures of colored objects that are reproduced in their natural coloring.

For example, on the evening of his exhibition at the Camera Club he projected a picture of a scarlet geranium growing in a flower pot. Now it was evident from the picture that it was a photograph, and, furthermore, what was most remarkable, a photograph in colors, yet showing no evidence of the application of pigment in any form.

In other words, there upon the screen was seen as in a mirror the original geranium, scarlet blossom, green leaves, brownish stalk, brown earth and red flower pot. The illusion was so startling in its beautiful reality as to almost take the spectator's breath away, and it was with a sigh of sadness that we saw the well nigh growing plant disappear from the screen upon which it was depicted with absolute fidelity to Nature's glowing coloring.

The method of obtaining these pictures has already been described by Mr. Ives himself in the columns of the *BULLETIN* some time ago, and is practically as follows :

By means of an ingeniously contrived camera with three lenses, three views of the same object are simultaneously taken through three differently colored glass screens, one of a reddish shade, another of a yellow, and a third of a bluish tint. These three pictures are all upon the same plate, but occupy different positions upon it, and the plate is so sensitized as to be color sensitive to the whole range of the spectrum. When it is developed we of course have a negative with three different sections upon it, one showing the red parts of the object, another the yellow parts, and a third the bluish portions.

From this negative a corresponding positive is made, which serves for use in projecting with the lantern. This positive is projected in a triple lantern, having three condensers, three lime-lights and three projecting lenses. Interposed between the condenser and the positive, showing the reddish portions of the original picture, is a reddish screen. In like manner between the positives, showing the yellow and the blue portions of the original picture, are screens of a yellowish and bluish tint respectively. These screens are selected with a spectrograph, and in such a manner that they correspond to the colors of the plates or screens through which the original negative was taken, but at the same time, the selection is such as not to be of exactly the same colors as the screens through which the first negative was taken, but rather of such a tint that they will produce upon the eye when the picture is projected in the lantern the fundamental red, yellow and blue sensations to which the retina is sensitive.

The result of projecting these three colored lights simultaneously upon the same spot on the screen without any slide behind them, is the production of white light, and it is not until the interpolation of the slides that the beautiful and startling chromatic effects are obtained.

These positives produced from an ordinary negative, if placed in the lantern in the same way and using the same colored screens, would project an image on the screen which would show no coloring whatever. It is possible, by a modification of this process, which, however, involves further complications, to produce color prints on glass or paper, but for the present the method of projecting in a lantern is the most successful and interesting as well as the simplest.

Mr. Ives has devoted the past ten years of his life in the perfecting of this process, and the results he has obtained are startling and of the highest scientific and general interest.

Praise without stint is due him both for the successful issue to which he has carried his ideas and the determined and persistent application he has given to this subject all these years.

Mr. Ives has made his discoveries the subject of letters patent, and shortly intends demonstrating them in England and on the continent, where we wish him most heartily the success that he has so well merited and deserved.

EDITORIAL NOTES.

WE have before us one of the best flash light pictures we have seen for a long time, made by J. R. Husson, of this city, who writes that it was made with a Dallmeyer rapid rectilinear lens by the aid of a Mize lamp, and printed on American "Aristo" paper, four months old. He further states that the paper was put directly from printing frame into the toning and fixing solution in the same way that any paper would be handled. The lighting and quality of the print are beautiful and detail fully equal to daylight. We also have a most beautiful and novel effect in the way of a child portrait on the same paper, which is colored with water colors just before burnishing. Mr. D. J. Wingfield, of Hammonton, N. J., the artist, writes that he lubricated with dry castile soap only; the effect is charming, and we would recommend its trial by others. Mr. Wingfield calls the print an *aquarilla*.

THE California Camera Club at its last slide exhibition showed nearly two hundred views of great excellence, and will give two or three exhibitions each month in hospitals and kindergartens; a plan to be emulated by other clubs.

THE Cincinnati Camera Club gave its eighth annual slide exhibition on the 25th of last month, which was well attended and very successful. A large number of slides were shown and enthusiastically received.

THE third annual exhibit of photographs was given early this month by the Mystic Camera Club of Lynn, Massachusetts, which lasted through three days and evenings, and called forth warm praise for the quality of work hung.

EIGHTY views were shown at the entertainment by the Buchtel College Camera Club, of Akron, Ohio, on the 28th ultimo. And on the 25th the St. Louis Camera Club gave two hundred slides, those of each contributor being started with his own portrait, which was something new. The slides were, as usual, of excellent quality, and the evening made more pleasant by the interpolation of music at intervals.

ONE hundred and sixty-four slides from the English prize slides from London were exhibited before the Syracuse Camera Club and its friends on the 24th ultimo with great interest and profit.

WE would express regrets at our inability to attend the recent exhibition of the work of leading American artists at the opening of the studio of Messrs. Chas. H. Davis and E. Starr Sanford, on Fifth Avenue, who have enrolled themselves on the list of New York photographers.

THE Albany Camera Club have elected the following officers for the ensuing year: President, W. Byington; Vice-President, R. L. Banks, Jr.; Secretary, John S. Paterson; Treasurer, Karl J. Phistever.

IT is claimed by Professor J. N. Hartley that the deterioration so often noticeable in ordinary water color paintings, is due, not to the fact that the

paper pulp is not sufficiently washed in process of manufacture, but that, after "souring" and washing, the paper is sized with gelatine and alum, and claims that the lack of permanence comes from a chemical action due to the presence of a basic sulphate of alumina.

FROM the latest information obtainable on the subject, it looks as if all photographers would be debarred from making exposures at the World's Fair, except the chosen few who are licensed by the Committee on Ways and Means, and unless the amateurs can put the matter in such a light as to show the Committee the injustice that must result from such a policy of exclusion, they will be unable to record much of interest to themselves and the world, which will also not be recorded by those having the permission.

MR. ALBERT J. BENNET, of Woonsocket, R. I., has patented an ingenious instrument for retouching negatives which is operated by electricity, the principle being quite similar to that employed in the electric pen introduced some years since. It is said to work accurately and well.

THE Irvington Art and Camera Club have organized, and the Orange Camera Club has secured a clubhouse.

A NEW year book of chemistry is in course of preparation by Bechhold, of Frankfort, Germany, the photographic part of which will be in charge of Dr. J. M. Eder.

THE Society of Amateur Photographers of New York announce for Friday, the 29th inst., an illustrated lecture, entitled "Picturesque Norway, from Christiania to the North Cape," by Dr. Charles L. Mitchell, of Philadelphia.

MR. W. W. WALES, of the Toledo Camera Club, was the fortunate winner of the club prize for best work at its late exhibition.

Dr. EDER suggests as an accelerator for use with hydroquinone the following formula:

| | |
|---------------|------------|
| Alcohol | 1,000 c.c. |
| Iodine | 20 grams. |

To which, after dissolving, should be added water, 1,000 c.c.

Three to six drops of this solution added to 40 c.c. of hydroquinone developer causes the image to come up quickly and produces great softness.

ELECTRIC light is being used on the other side of the water to quite a large extent for portrait work in studios, and with very good results.

THE guessing contest instituted by the Lynn Camera Club has been decided, and the prize, a beautiful bromide from one of E. F. Bacheller's surf negatives, awarded to Mrs. H. D. Porter.

AT its annual meeting on Tuesday evening, April 12, 1892, the Society of Amateur Photographers of New York elected the following officers and directors :

President, R. A. B. Dayton ; Vice-President, L. B. Schram ; Recording Secretary, T. J. Burton ; Corresponding Secretary, W. F. Hapgood ; Treasurer, C. C. Roumage ; Directors, James H. Stebbins, Jr., R. L. Bracklow, J. Wells Champney, James Spies, F. C. Elgar, E. Warrin, H. S. Mack, H. A. Smith.

WE are in receipt from Mr. C. E. Vredenburg, of Elizabethtown, N. Y., of two beautiful prints of winter scenery in which the snow and shadows are both rendered with wonderful accuracy and softness. Mr. Vredenburg is to be congratulated on the amount of feeling he has portrayed in this most difficult kind of subject.

L. BELITZI recommends the following as a reducer in development:

| | |
|-----------------------------|------------|
| Ferrous oxalate..... | 50 grams. |
| Sodium sulphite..... | 40 " |
| Oxalic acid (powdered)..... | 10 to 15 " |
| Sodium hypo sulphite..... | 250 " |
| Water..... | 1,000 c.c. |

ON Friday evening, 22d inst., the Thirteenth Annual Exhibition of the New York Microscopical Society was held at the American Museum of Natural History. We would acknowledge receipt of invitation with thanks, and regret our inability to be present.

THE Hoboken Camera Club have elected the following officers for 1892: President, F. A. Muench ; Vice-President, L. A. Smith ; Treasurer, C. L. Q. Beckers ; Secretary, R. Hartmann.

IT will be found that in the use of the new developer, brought out by our publishers, which they call Paramidoquinone, a quality may be obtained in the negative better than that which either of its principal ingredients will give alone, the addition of hydroquinone and other agents to paramidophenol tending to give great density. It will doubtless be largely used for lantern slides on this account.

OUR LETTER FROM FRANCE.

By LÉON VIDAL, *Editor of Le Moniteur de la Photographie.*

Surveying by Photography with Kites.—Telephotography.—Polychromic Lantern Slides.—The Lectures at the National Conservatory of Arts and Trades.—Those at the Paris Photo Club.—Photographic Chemistry.—Orthochromatism.—Intensifying Negatives of Line Subjects.—The Direct Photography of Colors.—Manganese Salted Paper Prints.—The Daguerre Daguerreotype Portrait.—The Coloring of Objectives.

ONE knows that Mons. Arthur Batut has had the idea (and he has succeeded in carrying it out) of adapting a photographic apparatus to a kite for the purpose of taking views from on high by the aid of a spring released by an electric current.

The results thus obtained surpass in value and utility anything that could be expected of it ; so much so that a surveying expert, Colonel Laussedat, has given his opinion to the effect that one might thus easily and economically

obtain the proper data for the topographical determination of quite a whole region. In this manner we can tell the distances separating the several stations from one another; also keep account approximately of the height of certain elevations of the ground, or of objects situated within range of view. One thus easily finds the converging points and deduces the correct survey of the locality under study.

This means is evidently more economical than the employment of a regular balloon, though one might just as well accomplish the identical purpose with small captive balloons having sufficient lifting power for a photographic apparatus, a means which is surely safer than the employment of a mere kite. Armies in the field could have this complement of material, still less cumbersome, more scientific, more practical and readier for immediate use than Mons. Batut's kite.

Thanks to the recent labors of Mr. Dallmeyer in England and Herr Miethe in Germany, telephotography has not only just taken a new step forward, but has also drawn public attention to it in such a way that in future it will be possible to reproduce certain details of an object situated at a great distance.

The Société Française de Photographie has been fully taken up with the importance of this discovery; so much so that its President, Mons. Janssen, has commissioned Commander Fribourg to prepare a succinct statement of this most interesting subject.

Mons. Fribourg has discharged his duty with his customary ability. He read a paper full of facts illustrating his subject by means of a series of comparative projections showing the results obtained both by ordinary as well as by telephotographic photography at distances varying from 250 up to 12,000 meters.

Dallmeyer's recent experiments, published by the *Bulletin de l'Association Belge de Photographie*, were also projected. In short, the paper read met with a great success.

At this same conference I had the honor of exhibiting the results of my own experiments relating to the synthesis of colors by the aid of a triple projecting lantern. Though this subject dates back to 1869, it was unknown to the bulk of the members of the society.

Mr. Ives' remarkably fine labors in this line drew my attention to the subject and caused me to reintroduce the synthetical method pointed out twenty-three years ago by Ducos de Hauron and C. Cros.

The instrument which I made use of—an ordinary triple lantern—is not at all adequate for this kind of projection; but, nevertheless, we managed to demonstrate the principle involved, to point out its essential elements, and lastly to project a series of subjects, some of which produced a very pretty effect and were unanimously admired.

It goes without saying that we are now busy at work trying to regulate the ensemble of these operations, and to this end I am having constructed, based upon my own latest ideas, as well as upon the maker's suggestions, indispensable special instruments to attain the highest excellence in this kind of polychromy so full of interest, and which will be called upon to replace that of monochromic impressions in the majority of cases where it will be possible.

The lectures at the National Conservatory of Arts and Trades are drawing to a close. There are still four to be given, when the series of nineteen will complete this year's course.

It remains to be seen whether the looked for result will be presently attained.

We doubt it. The object in view is to create a chair of photography at the expense of the State.

The interest of the public in attending these lectures has been cited as a proof of the utility of such instruction. This point has been fully demonstrated by facts, but this is not yet enough, because an annual sum of 15,000 francs must be found to endow this special course. There are no signs so far pointing to the probability that the efforts made in this direction will be crowned with success, and very likely we shall see next winter a repetition of this series of lectures, with trifling variations, which, as I said, are still going on.

Mons. Fourtier delivered a lecture at the Photo Club of Paris on the employment of lantern slides to illustrate the chemical phenomena connected with natural history, electrolysis, polarized light, etc., etc. For this purpose I was called upon to show the use of lantern slides in connection with assignment of colors. Mons. Fourtier's success was complete.

This savant has just written a Dictionary of Photographic Chemistry, which is published by Messrs. Gauthier Villars et Fils. It is a valuable work and will render very great service.

Orthochromatism is gaining ground with us, particularly since my efforts to make its advantages known, as well as to fight the preposterous pretensions of some self-styled patentee, who, no matter by what means, tried hard to stop all manufacturing of orthochromatic plates. Upon this subject I have read in an American paper* an article upon isochromatism, signed by one John Howson, in which its author evidently attributes in a vague way too great a share to the inventor of the French patent relating to the isochromatic process. This patent, besides not having the merit of a scientific invention, has been an obstacle in the way of expanding the industry of the manufacture of orthochromatic plates. The fear of a suit at law, with or without cause, has been the reason why this improvement in photography has bent its course abroad, having made no headway in France in spite of the advantages it offers. But this will come sooner or later, when people shall become more fully aware of the reality of the facts, and, consequently, of the rights and privileges of individuals.

For line subjects we recommend (ordinary plates are often good enough) an intensifying process that is not very frequently in use, *i. e.*, the copper bromide process.

A solution is made composed of—

| | |
|-------------------------|-----------|
| Sulphate of copper..... | 30 grams. |
| Potassium bromide | 15 “ |
| Water..... | 500 c.c. |

Having thoroughly washed, after fixing, the gelatino-silver bromide film, it is turned white in the above solution. It is then carefully washed and afterward immersed in a 5 per cent. solution of nitrate of silver. It becomes dark immediately. Should the proper effect not have been attained, the process is commenced anew. One can thus reach the intensity desired.

Messrs. Lumière fils write me that they have succeeded in obtaining traces of color on their sensitive films by exposing them for a quarter of an hour to a picture in full sunlight. It is to be presumed that by conveniently filtering the light they will succeed in directly obtaining the exact colors corresponding to the radiations of the reflected combined colors.

* The *St. Louis and Canadian Photographer*.

Messrs. Lumière have just made interesting experiments with manganic phosphate prepared paper. They can go through a series of impressions in blue, violet, green, etc., according to the nature of the developer.

This seems to constitute something new, consequently the beginning of new applications of photography.

Mons. Paul Nadar has presented to the Société Française de Photographie a daguerreotype portrait of Daguerre, a copy of which appeared in the "American Photographic Annual" of 1891.

Mr. Canfield's article attributes this singular print to an American, when, according to proofs obtained by Mons. Nadar, it seems to be the work of a Frenchman.

Mons. Arthur Lévy, optical instrument maker in Paris, has had the idea of coloring those objectives made for special uses by adding the desired color to the Canada balsam with which achromatic lenses are cemented together. I have suggested to him the idea of making a kind of colored screen by imprisoning the colored balsam between two sheets of thin glass.

We may add in passing that Mons. Lévy has a process for bleaching Canada balsam which enables him to construct whiter lenses.

As a matter of principle we do not recommend the coloring of lenses, but rather to have recourse to screens. It is better to be free to act at will, according to the nature of the case, than to be at the mercy of colored objectives.

PARIS, March 31, 1892.

TO LITTLE FALLS.

BY W. E. PARTRIDGE.

THE bright autumn weather, warm and soft, filled two of us with yearning for the fields and woods. Camera haunted, we turned our thoughts to the hills and waters, and at last planned to make an excursion to Little Falls, the Little Falls of the Passaic. Only one train would take us there, and that was in the morning, when the sun would be sending level rays across the rolling hills west of the town. The station was Twin Bridges, but it is but a name. Climb the high embankment between the two bridges which give the place a name, and one looks far down the line toward Delawanna, with nothing to break the long vista of rails and ties. To the north the road sweeps away with a great reverse curve high above the valley. Above is the blue vault of heaven. Neither stick nor stone nor plank marks the place of the station. We had climbed the bank and sat in the sharp morning air wondering if we were late. There were distant sounds of engines, trains were thundering away behind hills and woods, and we could hear the whistle signals on roads miles away. But our road was as silent as the sky above us. The air was nutty with the flavor of the fresh fallen leaves. To the right and left the wide, bare fields stretched away like brown, dead waves. At last there was a soft white plume beyond the low hills. Slowly at first and then faster and faster came the train. As the rails began to sing and talk it seemed to be the largest and most self-assertive engine that we had ever seen. The whole country was filled with the noise of it. Its bellowing bark was making us sink into the ground. That round number plate must have been 10 feet in diameter. Surely it was 50 feet up to where that awful being sat with his hand on the throttle looking

down calmly on us and our signals as he thundered by. And he did not stop. It was a fast freight, drawn by one of those new monster engines. And the cars behind bit and snapped our ears as they galloped along after the monster. Then there was peace. The horrible waking nightmare was gone around the curve, and we crawled up again from the edge of the bank.

Then we sat down on the rails as railway men do and waited. We didn't think. We were too busy enjoying the fact that we were out having a good time and were free from business. We sat there waiting and enjoying for three hours, though our lying watches said it was seven minutes. Then the train came behind a mild mannered, quite respectable passenger engine. Two men put their feet on the buffer beams and lean out from the platforms. We rise up out of the ground, choose the last of the two yellow cars, and with much toil climb upon the platforms.

We get inside with our cameras. There is room enough for us. We have seats to ourselves. We might have many more if we wanted them.

One could write an article on the early morning, local train. The dusky yellow car, clean but empty ; the six passengers ; the long space of empty seats ; the quiet, uninteresting stare that the newcomer gets, and then the roll and rattle of the train. After a while a brakeman comes through, then the conductor ; a quiet stop at a more quiet station ; a man gets off, and you see another get on and go into the smoker. There are but two cars. Then away across the fields which are just awaking, and at last we come to our station, where not a soul is in sight save a dog ; here we get out while the train is still moving and it slowly gets headway without coming to a stop. Such are some of the features of the country train in general and ours in particular.

We did not seem to be going fast, but the earth rushed away from us like a flying dream. We knew our station had come, and very silently, so as not to disturb the quiet of the car, we got out and dropped upon the platform before the car stopped. The train slipped quietly away and we were alone in the woods with the station and a yellow dog who stood looking at us.

The dog was friendly, came and smelled of us, of the lunch box, saw that we had no guns and was gone. He might have vanished into the woods or the ground. There was one long, straight road, pleasant trees and woods on both sides and hills away beyond. Little birds flirted in the bushes as we passed. There were blue and yellow flashes as they dashed away after having examined us and allowed us to come as close as they deemed prudent. Here and there single red leaves gleamed like belated poppies and proclaimed the opening autumn. The clear, bright air was crisp and fragrant with the story of an early autumn day. And yet summer was not gone ! There were flowers. A morning-glory opened its blue eyes at us, forcing the acknowledgment that no other name could by any possibility be given it. So for a mile we wandered along, the cameras growing heavy and the Falls seeming to be very hard to overtake. It was evident that they were moving in the same direction with ourselves and at very nearly the same speed. But there was a white bridge at last—the white, steel lines like spider webs against the trees. Under it the canal crosses toward the sunrise. All around a glory of trees covered with dew, and with each sigh of the wind comes the rumble of the Falls.

We are a little ignorant and so have to hunt. The photographic instinct is strong, and we seek the river where a heavy stone arch in a single mighty span

takes the lazy canal over the boiling, twisting river below, and the rocks like needles towered around on each bank. Some of the splinters of rock were as large round as a man's wrist and as long as his arm, sharp cornered and straight sided. The débris at the foot looked like wood split and cut for the fire.

Down we scramble, and hanging on to the sheer hillside, with camera fastened by a rope, sliding and slipping ourselves, we get a picture at a place fifty feet above the water. A great, white dog whose master was fishing made the woods resound with his musical baying as we crawled up the sliding, slippery bank, dragging our camera boxes after us. Then we crossed the river on the stone bridge and walked very circumspectly; for a mule, towing a boat, was crossing in the opposite direction, and his severe countenance suggested circumspection on the part of passers by. Down on the opposite side, among damp leaves and spray laden bushes, there was a wet, slippery path from which there were most beautiful glimpses of the wild, boiling water of the Falls, and the foam swirling away on the old gold water, all framed by the great arch of the bridge. Here we made some more pictures and counted the minutes when the shadows would be in the best position, and all the while, overhead, the swift September wind was rushing by, and the bright clouds drifted and sent their shadows flying over river, wood and field.

The day was ripening. The long shadows of the morning had shortened. We began to weary of nature as our thoughts turned inward. Hunger and thirst sent us wandering toward a spring above the dams, where sweet water and shade could be found. Here beside an old boathouse we found a clear spring coming out from under the roots of a big double birch. Though twined with poison ivy, the tree kept guard over sweet water. We sat on the rocks and ate our lunch. The little chipmunks ran past us and carried nuts to their nests.

The Stream of Pleasure could not have furnished a sweeter picture than that before us, looking across the quiet water to the grassy bank beyond, gilded by the sunlight flickering through the leaves.

Over all we had the distant sound of the rush of the water over the dam. In our eyes was the metallic glitter of the water crest as it turned to make its plunge over the brink.

Then we went away down the stream, where the basalt was in great steps, and clambered up and down sharp precipices, where we could feel the shudder of the Falls and see the water seething under us 50 feet below.

Once we went down to the very bottom of the ravine, and then we felt a thunder which seemed like that of a heavy distant train. We felt rather than heard it. Then it seemed to be distant thunder—but was neither train nor thunder. The great arch of the bridge was talking to the waterfall in a mighty bass. An echo of the Falls' terrific battle with the rocks; but it was in a deeper key, more calm and more profound. It looked on the controversy of water and rock, and out of its depths came an answer that made the air tremble.

On a narrow footing, with the river racing under us, we waited for the sunshine, to make pictures of the Falls.

Then, packing our apparatus, we climbed the slippery bank, and strolled along through the village and were started for home.

We wanted to take the canal bank, but the road was so much shorter that we gave it up and plodded drearily along the smooth McAdam. Once we stopped to make a picture of some chickens that had taken possession of the door-yard

and front steps of a house; but before the shutter would work a boy rushed across the way into the house, doubtless to announce that there were some surveyors outside. The hens were scattered, and the picture—well! it was never taken. On again in the yellow sunlight, the shadows were lengthening. At last we reach the canal again, turn off the road, climb up sharply and are on its beautiful bank. The canal is a sleeping river. The weeds and bushes come lovingly down to it and dip their fingers in it. It is not in so much of a hurry but it can stop and mirror every grass blade that grows near it. It does not feel the necessity of going anywhere. It can sleep and caress its friends. It has nothing to do but be happy and look beautiful. Behind a railroad bridge it widened into a bay, and on a point between canal and bay half a hundred cows, standing and lying down, were thinking and dreaming of hay and milking-time. We stopped to make a picture, but had to get out of the way of a mule who was pulling a boat very slowly. His nose was in a bag, and he had evidently gone to sleep. Just then the boatman discovered the fact, and at the bend hopped off the boat with a stick in his hand. I think he remonstrated with the bird on the end of the line, for we saw it straighten up, and as the man sprang on board again the boat was proceeding rapidly. Probably the mule waked up. The canal, high on the side of the hill, gave us a beautiful view along the valley. The day was perfect. We stopped to capture a flock of geese and the stern of a boat. We considered views, but there was a growing weariness, and we did not see pictures as we might have done. We said "morning light is better for this."

At Paterson we stumble out over the broad basalt plateau, where here and there the great hexagons stare at us from the grass, and have a race with the sun to see if we can get our panorama before he goes to bed. But he makes a long, broad red trail behind us on the water of the reservoir, long before we are ready. We make one picture, pack up and hunt for a street that will lead us to the depot. We are on a broad common on the top of a hill. The city seems to stretch miles away on all sides, save one. We try a path to the west, and in a few minutes we are standing on the edge of a bluff whose sheer face slopes away under us so sharply that we cannot see the base. We are on a narrow shelf a hundred feet high. We cannot climb down a sheer wall with cameras in our hands. We could not do it even if we were light. We have had enough of trying to find short cuts, the precipice has given us a shock. So we hunt till we find an old well worn path. Laboriously we get down to the streets. Our cameras gather weight with each step. And again we chase an object. This time it is the depot that goes sliding away from us as we walk. We can see the blocks lengthen one after another as we go. We race not only with the depot, but with our watches. They are in a hurry now. We know we have been only five minutes coming down, but they say it is twenty. But in spite of all we reach that depot at last. And then the train is late, and we wait, and have plenty of time to get over our hurry. And then get upon the wrong train, and go free by express to New York, and then back to our station by a later train, as jolly and happy as any other boys who have had a day full of happiness.

All communications for the columns of the BULLETIN should reach us on Monday preceding the day of issue, to insure their publication at that time.

THE CHEMISTRY OF THE METALS OF THE GOLD CLASS AND THEIR SALTS, AND THEIR BEHAVIOR IN PHOTOGRAPHY.

(Continued.)

BY P. C. DUCHOCHOIS.

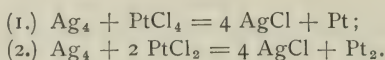
Platinic Chloride or *Platinum Tetrachloride*, PtCl_4 .—It contains 58.16 of platinum per 100. Heat reduces it to platinous chloride at 200 degrees, and to metal at a higher temperature.

It is prepared by dissolving platinum in a mixture of one part of nitric acid and two parts of hydrochloric acid, then evaporating to dryness. The residue—platinic chloride—is red-brown, deliquescent, soluble in water and in alcohol. The alcoholic solution is by time decomposed into platinous chloride and ethylene.

The *potassic platinic chloride*, K_2PtCl_6 , is scarcely soluble in water and insoluble in alcohol. It is obtained as a yellow powder whenever platinic chloride is added to a solution of potassium chloride acidified with hydrochloric acid.

The *sodic platinic chloride* is soluble in water. It crystallizes with $6\text{H}_2\text{O}$. Its reaction is neutral.

Platinic chloride is used in photography for toning the image black or gray-black and in the photo-ceramic substitution process. But the results are not as satisfactory as with the platinous salt; the image is more weakened from the conversion of a greater quantity of metallic silver into chloride, and necessarily without the equivalent of platinum being deposited, as shown by the following equations:



The action with alkaline baths is slow, often irregular. Hence the rule to use with the salt of platinum (and those of the metals of the group, gold excepted) a solution acidified with an inorganic or organic acid—those having reducing properties excepted—whereby the image rapidly assumes the black tone in passing by the intermediate shades without being much weakened.

The following formula is typical; the small quantity of platinic chloride has for its object to render the solution more stable:

| | |
|---|-----|
| Potassic or sodic platinous chloride..... | 1 |
| Platinic chloride..... | 0.1 |
| Sulphuric acid..... | 4.5 |
| Water | 960 |

When, little by little, $1\frac{2}{10}$ parts of sodium bitartrate are added to a boiling solution of 1 part of platinic chloride and 4 parts of salt in 200 parts of water sodium platinous chloride is formed, the bitartrate acting as a reducing agent (gastine). The solution, diluted with 1,000 or 1,500 parts of water, forms a good platinum toning bath.

Oxides of Platinum.—The platinous oxide, PtO , is a black powder obtained by treating platinous chloride with potassa. It is soluble in the alkalis and in acids. Hydrochloric acid forms platinic chloride and platinum is precipitated.

Platinic oxide, PtO_2 , is yellow. It dissolves in acids and in the alkalis, forming platينات, in which it acts as an acid. It is prepared by boiling platinic

chloride with potassa in excess until the precipitate, K_2PtCl_6 , dissolves by being converted into potassium platinate. This compound, treated with acetic acid, throws down the platinic hydrate.

Reactions.—The platinic salts are characterized by potassium chloride giving a yellow precipitate of the double salt. The platinous salts produce a green precipitate with aqueous ammonia. The precipitate is yellow with the platinic salts.

Zinc and iron, with the aid of heat, precipitate metallic platinum as a black powder in all the solutions of platinum.

PALLADIUM.

Palladium has a strong analogy to platinum; it is gray-white, very malleable, ductile, and melts easily in the flame of the oxyhydrogen gas, then burns, projecting brilliant scintillations. When in the pulverulent or spongy state it ignites hydrogen like platinum.

Palladium does not decompose water. It does not tarnish in the air, but when heated it becomes blue from formation of an oxide which is reduced at a white heat.

It unites directly with chlorine, iodine, phosphorus, arsenic, and possesses for cyanogen an affinity greater than that of any other metal. Hydrogen sulphide does not blacken it. It dissolves with the aid of heat in concentrated hydrochloric, nitric and sulphuric acids. Its best solvent is aqua regia.

Palladium unites with metals sometimes with evolution of light. The alloy of palladium and silver in equal weights is gray, very ductile, harder than wrought iron and capable of receiving a good polish. It is employed to manufacture the scales of thermometers and marine instruments. Alloyed to 20 parts of silver it is used by dentists; united to steel in the proportion of $\frac{1}{100}$ it forms an alloy exceedingly tenacious, which is utilized for making fine cutting tools.

Palladious Chloride, $PdCl_2$.—This salt is obtained as a dark brown powder by dissolving palladium in aqua regia and evaporating to dryness on a water bath. Heat decomposes it.

Palladious chloride is very soluble in water. Aqueous ammonia forms a light rose precipitate soluble in excess; potassium iodide throws down the characteristic black iodide of palladium; mercuric cyanide gives the cyanide which is yellowish white.

The double salts of potassium and sodium are soluble in water.

The use of palladious chloride in photography for darkening weak negatives or toning transparencies, etc., was suggested by Dr. Henry Draper.* The solution should be acid. The following formula is given by P. Mercier:

| | |
|--------------------------|-------|
| Palladious chloride..... | 2 |
| Sodium chloride..... | I |
| Acetic acid..... | 200† |
| Water..... | 1,000 |

Palladic chloride, $PdCl_4$, is prepared by digesting palladious chloride in aqua regia. Water decomposes it into hydrochloric acid and $PdCl_2$.

* *Photographic News*, 1859, No. 41.

† The whites of the proofs take a yellow tinge, which partly disappears by treating the proofs with ammonia.

Oxides of Palladium. *Palladious Oxide*, PdO .—The anhydride is black, little soluble in acids and obtained by calcining the nitrate, $\text{Pd}(\text{NO}_3)_2$.

The hydrate is dark brown, soluble in acids, in the alkalies and in ammonia. It is prepared by decomposing the nitrate by an alkaline carbonate.

Palladic Oxide, PdO_2 .—This oxide is not known in the pure state, being allied to a part of the precipitant when the corresponding chloride is decomposed by an alkali. Heat transforms it into palladious oxide, then reduces it, if the temperature be increased.

It is soluble in acids. Concentrated hydrochloric dissolves it without decomposition, but when diluted it gives off chlorine.

Reactions.—Potassa and soda produce a yellow brown precipitate, soluble in excess. Aqueous ammonia produces a reddish yellow precipitate. Potassium iodide produces a black precipitate. Sulphurous acid and ferrous sulphate reduce the salts to metal. Zinc precipitates palladium as a black powder.

RHODIUM.

Rhodium is gray-white, very refractory, hard, brittle, and can easily be reduced to powder. It is not acted on by oxygen, does not dissolve in acids. Aqua regia attacks it only when it is alloyed with other metals.

Reduced to powder rhodium decomposes alcohol in presence of an alkali. It converts oxalic acid into carbon and hydrogen.

It is obtained by reducing the sodic double chloride by hydrogen.

Chlorides.—Two chlorides are known: The dichloride RhCl_2 , which is gray-red and insoluble in water. It is obtained by dissolving an intermediate oxide of rhodium in hydrochloric acid, when it is deposited, leaving the sesquichloride in solution. The sesquichloride Rh_2Cl_6 is brown-black, uncrystallizable. Its solution is red. It forms double chlorides, which are crystallizable. The ammonium salt is very soluble in water.

Employed in photography as a toning agent it gives a yellow tint.

There are three oxides of rhodium and several intermediate ones which present little interest. The monoxide, RhO , explodes when mixed with sugar and tallow.

Reactions.—Potassa produces a yellow precipitate soluble in excess. The precipitate is red with stannous chloride and brown with hydrogen sulphide. Zinc reduces all the salts to metal.

RUTHENIUM.

This metal is as little fusible as osmium. It is insoluble in acids and slowly acted on by aqua regia. When finely divided it acts as rhodium on alcohol and oxalic acid. It forms three chlorides. The dichloride, a black compound insoluble in water. The sesquichloride, Ru_2Cl_6 , is deliquescent, soluble in water and in alcohol. The aqueous solution slowly decomposes into hydrochloric acid and sesquihydrate. The tetrachloride, ruthenic chloride, RuCl_4 , is known only in combination.

In photography it tinges the proofs yellow.

Four oxides of ruthenium, RuO , Ru_2O_3 , RuO_2 , RuO_3 and RuO_4 , are known. The ruthenium monoxide is dark gray and insoluble in acids. Ruthenious oxide is bluish black. It forms yellow solutions with acids. The dioxide is dark blue. The tetroxide or ruthenic oxide is volatile, little soluble

in water, soluble in hydrochloric acid and precipitated from its solutions by alcohol and sulphurous acid. The trioxide is only known in combination.

Reactions.—Ruthenium is characterized by the deep red color imparted to a solution of potassium ruthenate by potassium sulphocyanate. The color is changed into violet by heating, and purple red by lead acetate.

IRIDIUM.

Iridium is a white, brittle and very refractory metal, unalterable in the air, not attacked by acids and aqua regia. The latter dissolves it when alloyed with platinum. However, it oxidizes at red heat and dissolves in aqua regia when obtained by the reduction of its oxide by hydrogen.

On account of its great hardness iridium is used to tip gold pens.

It is obtained by the calcination of the ammoniac double chloride in a spongy form possessing the property of igniting hydrogen.

Iridium dichloride, IrCl_2 , is not known in the chemically pure state. It is insoluble in water, but soluble when united to potassium, sodium and ammonium chlorides. It is obtained by treating the divided metal in a current of hydrogen.

Iridious chloride or sesquichloride, Ir_2Cl_6 , forms with the alkaline chlorides compounds termed iridoso chloride, iridious chloride or chloriridites, which are prepared by decomposing the iridic chloride by sulphurous acid. They have much analogy to the platinoso-chlorides.

Iridic chloride or iridium tetrachloride, IrCl_4 , is soluble in water. The solution is red-yellow. It is prepared by dissolving an oxide of iridium in aqua regia.

Oxides.—The monoxide is obtained in precipitating the potassic double chloride by an alkaline chloride. It is greenish black. When hydrated it dissolves in acid and in the alkalies. It is not reduced by heat. The sesquioxide does not dissolve in acids. The alkalies form red salts. The iridic oxide, IrO_2 , is prepared by boiling iridious chloride with an alkali. It is a green-blue powder turning indigo in the air. With acid it forms brown solutions.

The color imparted by iridium as a toning agent to photographs is similar to that obtained by gold. The toning solution should be acid and the salt at the minimum oxidation.

OSMIUM.

Osmium is bluish gray, hard, brittle, and the least fusible of the metals.* The order of fusibility of the metals of the platinum group is as follows: Palladium, platinum, iridium, ruthenium, osmium.

In the compact state osmium is little acted on by oxygen, but when pulverulent it takes fire at redness and then burns, being converted into osmic oxide. It is soluble in nitric acid and aqua regia, osmic oxide being formed.

Osmium is the best metal which can be employed to increase the hardness of steel. The proportion recommended is $\frac{1}{10}$ of osmium.

It forms three chlorides and as many as five oxides. The dichloride is dark green and dissolves in water, being decomposed into osmic oxide and hydrochloric acid. It forms soluble double salts with the alkaline chlorides. The tetrachloride or osmic chloride, OsCl_4 , is orange-red, soluble in water, in alcohol

*According to L. Troost ruthenium is still less fusible.

and ether. The diluted solution is partly decomposed into osmic oxide and HCl. The sesquichloride, Os_2Cl_6 , is known only in solution.

Oxides.—The monoxide is obtained as a hydrate in precipitating the potassic dichloride by potassa. It is dark green, dissolves in acids forming green salts, and is reduced by sulphur dioxide. Osmium sesquioxide, Os_2O_3 , is black. It is reduced by zinc and iron. The dioxide is obtained by treating the potassic dichloride by potassium carbonate with the aid of heat. The osmic oxide, OsO_4 , is soluble in water, possesses powerful oxidizing properties. It is poisonous. It acts rapidly on the skin, which becomes black and covered with tetters. Its odor of horse radishes is pungent, insupportable, affects for a long time the sense of smell, excites coughing and painfully attacks the eyes. It is obtained by heating to redness osmium in oxygen.

All the salts of osmium heated with nitric acid in excess evolve the odor of osmic oxide.

Osmium may be employed to color photographs. P. Mercier gives the following formulas :

| No. 1. | |
|--|--------|
| Ammonium chlorosmite..... | I to 2 |
| Acetic acid..... | 20 |
| Water..... | 1,000 |
| No. 2. | |
| Ammoniacal osmium chloride of Frémy..... | 1.5 |
| Potassium osmiate..... | 0.1 |
| Acetic acid..... | 15 |
| Water..... | 1,000 |

The changes occurring during the "toning" process are quite remarkable. The proof in the beginning takes the color of burnt sienna; then this color first changes in the half tints, and the image becomes of an azure blue, more or less intense, which spreads all over the proof. If instead of allowing the image to tone blue one removes the proof when this color only commences to appear, it seems to continue to tone a little in the fixing bath; but if removed from the same at the proper moment, one obtains proofs having the most curious appearance; besides the white of the paper, two different tones are formed—a light brown in the black and a blue in the half shadows.

With mineral acids the ultimate coloration given by osmium is no more blue, but light violet, and this tint even appears in the whites of the image (P. Mercier).

DANA'S NEW BROOKLYN STUDIO.

SEE FRONTISPIECE.

ONE of the most striking instances of business enterprise, push and energy that has come to the notice of the photographic fraternity from its own ranks for a long time, is to be seen in the recent venture of E. C. Dana, whose studios in New York City, Saratoga Springs and Newport, R. I., have been so long and well known.

Feeling that another promising field lay ready for him, Mr. Dana has opened and equipped, in the heart of the shopping center of Brooklyn, one of the daintiest and cosiest establishments of its kind to be found in this country, and as the appointments were characteristic of Mr. Dana, so was the method he adopted to bring it to the attention of his friends.

Prior to the date of its opening, handsome engraved cards were sent to such as would naturally be interested, announcing that for the afternoons and evenings of a specified week, the gallery would be open for inspection, that a choice collection of water colors, pastels, aquarelles, etchings and photographs would be exhibited, and requesting their attendance with friends.

The large number who responded and enjoyed the artistic effects to the eye and ear, for an orchestra was also in attendance, could not but have been impressed with the thought that success must attend the future of the movement.

The building selected by Mr. Dana is on the corner of Fulton and Bond streets and is occupied solely by himself with the exception of the street floor. The entrance is on Bond street and is protected by a porch of mason work terminating in a dome-shaped top in which the name "Dana" is worked in colored glass lighted by electricity. The arch is of Byzantine architecture and brilliant in blues and gold.

The wide entrance doors are of antique oak with oxidized silver handles and small panels of heavy beveled glass. A short flight of stairs, paneled in oak, with sharp turn to the left, gives access to the reception room, a view of which is given as a frontispiece to this issue of the BULLETIN, and which is noticeable for the light, cheerful and harmonious effect of decoration and furnishing. The reception-room proper and business office is cut off from the front room by a large arched screen of fretwork in cherry wood, and the desk and counter, on which is afforded ample room for showing prints and albums, is covered with blue plush.

The front room, with almost the entire front of glass, is daintily draped and decorated in tones of terra cotta and blue, which is the general scheme of color throughout the building. The effect on the opening night, with every available corner filled with flowers and potted plants, walls and easels covered with pictures, and music from the rooms above just sufficiently loud to be restful, was a study in harmony—the gay costumes and many lovely studies of life only adding to its charm.

On this floor, in the rear of the desk, is Mr. Dana's private office. On the floor above is a large parlor for ladies, with dressing-room and private dressing-room opening off. Also a gentlemen's parlor and toilet rooms. All of which are furnished with the same good taste noticeable throughout.

On the next floor, the first room entered is the operating-room, with a skylight 19 x 55 feet, having an exposure slightly west of north and a height of 15 and 20 feet front and back. The floor space is amply large to afford accommodations for the numerous accessories requisite, and is well equipped with the best instruments obtainable.

Directly off this room and connected by a slide, so arranged that only one side can be opened at a time, thus rendering it impossible to admit light not wanted, is the darkroom. The appointments here are exceptionally complete. The entire floor is laid in asphalt, the overflows are ample, ventilation good, and electric light supplied from a darkroom lantern 15 inches square, having a switch for controlling its brilliancy outside the box. White light may be obtained at any time from a 16-candle power burner in an opal globe on the other side of the room.

Sinks and washing arrangements occupy the left of the room, while on the right are large and small bins for storage of plates, both exposed and unexposed,

of varying sizes, either in the original boxes or in holders ready for immediate use. The hypo tank is so arranged as to hold three racks, each of which will contain ten plates, and when the third rack is full of developed plates, the first is lifted out and placed in the washing tank, which is of the same size as that for hypo, and is kept supplied with constantly changing water from perforated pipes in the bottom. Each tank and sink is separately connected with the sewer and may be flushed for cleaning independently of its fellows. Ample shelf room is conveniently at hand for storage of bottles, graduates, funnels, chemicals, etc. Gas heating apparatus also occupies a convenient corner.

The retouching room occupies a portion of this floor, and immediately over it is the printing room, built of glass and having accommodations for seven hundred frames. In connection with arrangements here for washing and toning, is a large tank with a coil of pipe connected with the main in the street, having under it a heating apparatus capable of bringing the water to a high temperature as it passes through the coil. This is of especial value in connection with the toning of "Aristo" paper, which Mr. Dana is now using exclusively. The house is heated by steam and fitted with electric light and each room is in direct communication with the office by means of speaking tubes. A dumb-waiter also runs from the operating-room to office.

It is seldom that a more harmonious arrangement of all details is to be found than here. The fact that Mr. Bassett is in charge of the operating-room and that the establishment is Dana's, is ample guarantee that the work produced will be fully equal to that high standard which has always characterized his productions. We wish him and predict for him all possible success.

LANTERN-SLIDE METHODS.

BY MISS CATHERINE WEED BARNES.

THE above subject was the title of a lecture before the Hoboken Camera Club. The lady accompanied her subject by work of her own, and fully emphasized the fact that every woman who has energy, taste and a desire to earn an independent livelihood may find in photography the means of gratifying that desire, while finding both pleasure and profit in following the fascinating study of picture making.

"There is a solid substratum of common sense in the prevailing favor with which lantern slides are received. They have become an almost essential requisite in these days to any lecturer whose words admit of being made more impressive by adding the evidence of sight to that of hearing. Strangely enough, people will believe their eyes who doubt their ears. This fact being conceded, it remains for me to give some faint idea to-night of the great stature to which this work has grown, what it can be made to mean, and a little, only a little, about how it is done.

"The old idea of the magic lantern impresses those who give little thought to camera work with an almost absolute conviction of its being a kind of trick—really sleight-of hand or magic. And when they are told that lantern slide work is a well defined and not over and above easy branch of photography, requiring constantly growing experience and thoughtful care to accomplish good results, they smile indulgently, if they do not actually say they doubt your statement.

"One of the strongest reasons for slides being so popular is that so many

more people can thus enjoy a picture than when it is in the form of a print, and still more, that with great care and trouble, it may be one can sometimes obtain from a poor printing negative a respectable slide. This, in many cases, is valuable, as from it, if made by reduction and strengthened, a good negative of any size can be had. The objection that such negatives are usually blurred and indistinct in outline can be largely overcome by making the image on the slide as small as is consistent with clearness, focusing as sharply as possible, timing very carefully and using special pains in development. The advantage is that if such a negative is broken or injured, another can be quickly made from the slide, and where it is difficult to photograph the object over again (always best when that can be done) a camerist need not be at the risk of losing a valuable picture. This often means much trouble, but not necessarily great expense, and to lazy, trust-to-luck photographers who seem to expect their pictures to appear like that described by Sam Weller, with 'the frame and glass on complete, with a hook at the end to hang it up by, and all in two minutes and a quarter,' I have nothing to say.

"It is always the workers who are most anxious to learn, and trouble to them is of little consequence when aiming at good results.

"In a recent volume by A. R. Dresser, the distinguished English slide-maker, he strongly advocates making slides in a copying camera, and it is gratifying to have my own opinion confirmed by such an able worker, for I do not like contact slides as a general thing. He goes to the extent of recommending the process even with negatives as small as $3\frac{1}{4}$ inches square. Some of the advantages in this way of making slides are that you can overcome defects in the negative, leave out any part that is wished, enlarge or reduce as desired, and, what always seems miraculous to the uninitiated, make an exposure, develop the plate and make a slide from the wet negative in a very short space of time, which is, of course, impossible by contact. It is not necessary to have an elaborate outfit, if you only have a good short focus lens, but you must supplement it with a greater output of brain force to devise expedients for overcoming deficiencies in the camera, etc.

"In visiting a celebrated slide-maker's work-room lately, I was ashamed of my own expensive apparatus when examining the simple means he used. An old discarded wet plate camera, slightly altered, an ingenious arrangement for using any size negative, and a fine lens. The whole was simplicity itself, and yet his slides are known wherever photography is, and that is saying a great deal.

"A somewhat similar apparatus is described in Mr. Dresser's book. I fully agree with the latter in laying stress on the position of the apparatus in the room and noting accurately the actinic force of the light at the time. It is not understood by some how much exposure is hastened when snow has fallen and how very useful is a ground glass behind a negative, or the reason for placing the negative film side to the lens (otherwise the image on the slide would be facing the wrong way), or the absolute necessity for having the front of the camera square with the negative. In other words, how very easy is it to fail, and then blame the instruments, chemicals, maker or dealer, and not the worker. One special object of blame is the plate, and each camerist has his favorite one, not that it is necessarily the best, but with it he accomplishes the best work.

"During my proposed photographic trip to England and Scotland this

spring and summer, when I expect to attend the annual convention at Edinburgh, I shall make a study of the English method of work and try to ascertain its true inwardness. But there is no earthly reason why, with proper patience and perseverance, any one who can make a good negative should not make a good slide. If prevented from using a copying camera, he certainly can make them by contact in any ordinary printing frame, but should back his plate with dark material, as frames generally are lined with white canton flannel. I would then advise their being made by gas, magnesium or electric light, which can be readily controlled. Some workers prefer artificial light in any case. Many of the societies provide facilities for this work, and I constantly wonder that it is not more widely taken up; but it is sadly evident that in every society a few members do the most of this work. While the claim is made still, and very positively, that a wet plate slide is the only true one, all others being unworthy of consideration, yet high authorities all over the country are beginning to believe that just as good effects can be gained with dry ones.

"I do not offer those shown to-night as examples to be followed in every particular, but as illustrating certain artistic and technical points. The amateur, however, after going through all stages of the slide fever with ready-made plates, sometimes becomes fired with an ambition to coat his own plates. There are several ways of doing this, and although not expensive, they are more or less troublesome; but the genuine camerist, devoted to his work, never knows when to give up, and, as I can testify, never likes to own a positive defeat. It is a source of regret to me that I am prevented by my urgent editorial duties from using my own emulsion closet. At present it is occasionally used to dry carbon tissue, and then only at intervals.

"I cannot understand those good people who wonder what there is in photography to make its devotees so devoted, when discoveries and improvements are being made almost every day in its already wide field. Perhaps this is the more strongly impressed on me from the fact that so many instruments, chemicals, etc., are sent to an editor for testing, and the various photographic periodicals, foreign and American, fairly bewilder the novice with the extent to which the work is being carried. One very tempting path is in the direction of its different printing methods, experimenting with new printing surfaces and developers; and here is where there is boundless capacity for improvement, while with slides there is less variety in the material used, but a great deal in how it is manipulated. Success is, however, impossible unless one thoroughly believes that what he is doing is worthy of his best energies, no matter what the line of endeavor, but that blindly sticking to it will never accomplish anything really valuable. What is required is steady, wide-open-eyed perseverance and cultivation, not merely of one's artistic and technical vision, but a perpetual post-graduate course in accurate reasoning. The scales and weights on one's shelves then become something more than senseless machines, and are as symbols of the wonderful balance and delicate adjustment of the human brain. You will only get from photography that which you give it; but one can give a great deal, and if you make yourself believe that, in it, no art is possible, you will certainly never find any. He who seeks will find. To succeed, you must read intelligently, study carefully, believe it is worth while to give your best attention to camera work, and then translate your study into practice, watching critically every step and cutting places for your feet, as do the climbers on the Alpine

glaciers. No sudden flights of inspiration will carry you very far, although inspiration is needed sometimes to keep up one's courage.

"I wish to urge at the same time the never being satisfied with one's work. Avoid that as you would a pestilence; it is fatal to further progress. Your satisfaction will be like that of the five little green peas in Hans Christian Andersen's story, whose tiny pod was all the world to them. While measuring yourself against others and learning to realize your own shortcomings; you will often find, by the great law of compensations, an unexpected balance on the credit side of your account; but it must be fairly earned.

"This talk has not been intended for a strictly scientific one, but only to show those of you who have paid little if any attention to this subject that it is worth being made much of for the sake of the future before it, and what use can be made of it. Such associations as the Lantern Slide Interchange are doing much in this country and abroad to disseminate a great amount of knowledge—scientific, artistic and historical. The work can be made a valuable adjunct in educational training if used to instruct as well as amuse. It is fascinating work, and from experience I recommend it to all camerists, men and women, believing that there should be no sex in photography, that each should bear the burden and heat of the darkroom, do the same work throughout, share equal criticism and receive the same reward."

BLISTERS OR NO BLISTERS.

BY F. E. PAYNE.

IF you are so patient as to endure blisters, you might make a good Moses, but not a good photographer. If you can cure them, you're lucky. Tell your brothers how. But a centigram of prevention is best of all. You think a centigram too little. Perhaps it is. I generally use about a dram. That is entirely sufficient, if used in the right place. Well, what is it? you say. Don't hurry me. I find sometimes it is best to hurry up slowly. For example, about four months ago I was on the point of sitting down to scribble off a few lines to send to the BULLETIN announcing my discovery and telling you all just how to do it. I had it down fine and could succeed every time. But just then I happened to get a new printer. Of course I had announced my discovery to him, and I was sure the demon had been exorcised, as far as this gallery was concerned. He followed instructions to a *T*, and behold a large crop of as healthy blisters as you ever saw. I had him explain how it happened. He did as I had told him, and that was all he could say. I handled the next batch and there were no blisters. My printer *saw* the whole operation and then tried again. He succeeded in getting just as many blisters as before.

I determined to watch him the next time and see how he contrived to do it, and I was not long in discovering the cause; and yet there was scarcely any difference at all in our methods, so a casual observer would say, yet there was the difference between success and failure, which is not so slight after all.

I have made haste to tell you very slowly as you see, because I wish to lay a great deal of stress on this precept. Don't condemn any process because you are not successful in working it at the first attempt. In almost every instance there are very many details omitted, and you will have abundant opportunity to exercise great care, especially for a few times till the routine becomes familiar.

And, on the other hand, I would suggest that we all pass our processes through other hands before we rush into print with them directly we imagine we have discovered something.

Now for the details. I use only ordinary care in regard to the temperature of the water. I have not found it essential, as perhaps that which I use does not vary so much as in some cases. 1st. I usually wash prints in two waters, unless I have an extra large batch, when I use my judgment and perhaps more water also. 2d. I redden prints in a weak solution of salt—a good pinch perhaps to a gallon of water. I have found it decidedly detrimental to use too much. If the prints redden nicely by being in the bath from three to five minutes, I think I have it about right. 3d. I transfer prints to fresh water, then tone. Your formula for toning is probably as good as mine, so I will not offer any suggestion in regard to that. 4th. From the toning bath my prints go into fresh water again. Then I fix them in hypo in water about 1 to 8 or 10. I do not think the strength material. Anywhere within reasonable limits gives me equally good results. If hypo is weak, fix thirty minutes; if stronger, less time. But I invariably add to my bath some carbonate of soda. I use about a dram of the 1 to 4 solution I use for developing to two or three quarts of bath. If you prefer, you can use ammonia, or any other alkali, but unless you wish to start that decomposition which will result in making toy balloons all over your paper, don't omit the alkali. If your olfactory nerves are in order, you will discover the omission as soon as you put your prints into the bath, while the presence of this small quantity of alkali will entirely prevent any smell.

But all the care you take up to this point is liable to be of no avail. Blisters almost invariably appear in the first washing after fixation, but following the above directions in compounding the fixing bath will greatly assist in making the future operations entirely successful.

It is usually recommended to transfer prints from the fixing bath to a strong solution of salt, the theory being that a too sudden change in the density of solutions containing the prints is a prolific source of blisters. I discard this theory *in toto*. A change of physical conditions merely is not the cause of blisters, at least such a change as prints are liable to undergo in the ordinary processes of finishing, but a sudden change in chemical conditions is quite liable to cause them. Now, I allow that salt is good. It is entitled to much credit in preventing blisters, but it is not that property of density which it gives to the liquid in which it is dissolved. It is that property of preventing a sudden chemical change in the prints when removed to it from the fixing bath. I have before me a weak solution of salt in water into which, about half an hour since, I placed two pieces of litmus paper—blue and red.

At this moment they are both blue. A solution of salt is inclined to alkalinity. This is the property which prevents a chemical change in the prints when placed in it.

Now take advantage of this and render the salt bath still more alkaline if you will, by adding a dram of the above mentioned soda solution to the gallon of water in which you have dissolved a tablespoonful of salt and you have a solution which will prevent blisters every time.

However, a great deal depends on your attention to details yet. Your prints will not wash themselves any more than they will tone themselves if you put them into a gold bath all in a lump. This alkaline solution following the

hypo bath will not be effective unless it comes into immediate contact with the whole surface of the print. Leave two or three prints sticking together for three or four minutes in this alkaline salt bath and you will be ready to swear the whole thing a sell. That was the fault my printer fell into at the start. He has not had any blisters for three months and never expects to have them. The prints should be constantly moved about in this alkaline salt for ten minutes. They may then be placed in a stream of running water to wash themselves. I turn the hose into the tray containing the alkaline salt bath and the prints, and the stream keeps the prints moving while the solution becomes gradually fresh; but if the greater part of the hypo solution is washed out, no fears need be entertained that blisters will appear though the prints were changed to water entirely fresh.

Three things, then, I find to be essential :

First.—An alkaline fixing bath.

Second.—An alkaline wash water after fixing. Salt is not absolutely necessary.

Third.—Care in keeping prints separate and moving about in alkaline wash water till a considerable portion of the fixing chemicals are washed out of them.

The above was written some time since, but I have no reason to change my theory to suit the facts. Aristo has replaced albumen in my gallery, but many still use the good old process, and I trust some of them may find the above useful.



NOTES ON SOME NEW RAPID ORTHOCHROMATIC COLLODIO-BROMIDE EMULSION PROCESSES.

BY COLONEL J. WATERHOUSE, S.C.

(Continued.)

BEFORE coating glass plates with emulsion they must be prepared with a suitable substratum of gelatine, or it may be sufficient to simply pass some of the gelatine solution round the edge of the plate.

Dr. Jonas gives the following formula :

| | |
|-----------------------|----------|
| Gelatine (white)..... | 5 grams. |
| Distilled water..... | 500 c.c. |

when dissolved add—

| | |
|--------------------------|---------|
| Glacial acetic acid..... | 15 c.c. |
| Alcohol..... | 15 “ |

The plates are well cleaned in the ordinary manner usual for wet plates, and are then flowed twice with the above solution and allowed to dry in a place free from dust.

I find that this solution does not give an even coating and might be better thinner. It answers, however, very well indeed when applied to the edges of the plate, and can be kept for use as required.

For the coating and development of these color sensitive emulsions the light in the darkroom must be red or such as is used for the most sensitive gelatine plates; yellow light will not do.

The plates coated with these colored emulsions are most sensitive when exposed in a moist state. If allowed to dry they are said to be about ten times less sensitive. I have not tested this, but it seems not impossible to find a method of retaining the sensitiveness of dried plates.

For plates to be coated with the colored emulsion all that is necessary is to coat

the plate with emulsion, place it in the dark slide and expose just as it is. In using the bath for coloring, I first coat the plate, then wash under a rose after the collodion has well set, then flow with or place in the diluted color tincture for a few moments to thoroughly and uniformly wet it, then drain, put in the dark slide and expose.

For developing the plates Dr. Jonas recommends a hydroquinone developer which seems to be a slight modification of that recommended by Dr. Albert. The formula is, however, rather complicated :

CONCENTRATED HYDROQUINONE DEVELOPER.

A.

| | |
|-----------------------|--------------------------|
| Sodium sulphite..... | 200 grams. (250 Albert). |
| Potash carbonate..... | 200 " (250 ") |
| Distilled water..... | 500 " |

B.

| | |
|-----------------------------|-----------|
| Hydroquinone..... | 25 grams. |
| Alcohol (96 per cent.)..... | 100 c.c. |

C.

| | |
|-----------------------|-----------|
| Ammonium bromide..... | 25 grams. |
| Distilled water..... | 100 c.c. |

The concentrated developer is then mixed in the following proportions :

| | |
|--------|-----------------|
| A..... | 100 c.c. |
| B..... | 5 " |
| C..... | 7 " (5 Albert). |

The proportions of B and C may be varied as necessary, the hydroquinone giving strength, the ammonium bromide clearness, and the carbonate of potash sensitiveness.

The developer for use is made as follows :

| | |
|-----------------------------|----------|
| Concentrated developer..... | 150 c.c. |
| Water..... | 1,000 " |

The strength may also be varied according to circumstances.

I have used with good results a hydroquinone developer made up of—

| | |
|------------------------|----------|
| Hydroquinone..... | 1 part. |
| Sodium sulphite..... | 4 parts. |
| Lithia carbonate..... | 1 part. |
| Potassium bromide..... | 5 parts. |
| Water..... | 100 " |

Also ferrous-oxalate developer as made up by Mr. B. J. Edwards for gelatine plates.

The para-amidophenol developer seems very well suited for these plates and gives clear, vigorous results.

| | |
|-------------------------------------|----------|
| Para-amidophenol hydrochlorate..... | 1 part. |
| Sodium sulphite..... | 5 parts. |
| " carbonate (anhydrous)..... | 4 " |
| Water..... | 200 " |

First dissolve the para-amidophenol in the water, then the sulphite, and finally the carbonate. In this way there is no precipitate, but if there should be any, it may be redissolved by heat.

This developer gives great density and clearness and seems almost inexhaustible. One of the plates I have with me was the seventh developed in a few ounces of it ; but, as you will see, it is the strongest of the series and indeed is too strong. After eight plates had been developed, the developer was barely discolored and would develop many more.

I have also tried pyrogallic acid developer, using the formula for pyro and ammonia recommended by Dr. Eder for a similar process ; but though it gave nice, soft pictures full of detail, there was a want of the brilliancy and density shown by the

para-amidophenol. It is likely that different developers may be found most suited for different classes of work.

The plates can, if necessary, be intensified, either before or after fixing with any of the ordinary acid pyro-silver or hydroquinone-silver intensifying solutions, or, if extra density is required, by the bromide of copper or mercurial processes.

For fixing I have used hypo; the image clears at once, and a very much shorter washing is necessary than is the case with gelatine.

Over dense negatives may be reduced with hypo and red prussiate of potash in the same way as gelatine negatives.

As you will see from the specimens I have brought with me, the entire virtue of the process lies in the colored sensitizing solution of eosin or erythrosin silver and ammonium picrate which was discovered by Dr. Albert. A plate coated with the colored emulsion and exposed for one minute to a colored picture gives a fine, dense, brilliant image, well orthochromatized for the yellow, while a plate coated with the same emulsion, but not colored, and exposed for the same time and developed with the same developer, gives only the ghost of an image. This effect is very remarkable, and its cause is not quite clear. You will also see that with the same exposure and development the collodion plates are quite equal to, if not better than, those taken on Wratten's "Ordinary" gelatine plates, either plain or orthochromatized, under exactly the same conditions. It may be mentioned here that the coloring solution given above when diluted to 1 : 10,000 forms an excellent orthochromatizing solution for gelatine plates, though it remains to be seen how they will stand the excess of silver in keeping.

The exact value of the ammonium picrate has yet to be investigated. Dr. Vogel seems to think it unnecessary, but it undoubtedly adds to the orthochromatic effect of the eosin dye.

I am sorry I am not able to show you a more extended series of specimens of work done by the new process, but those I have will, I think, be sufficient to show you its capabilities and possibilities. There is little doubt that the plates may be made more sensitive. The process is certainly a simple one, and, so far as I have yet found, does not require any very special precautions in working. Under the conditions under which we could work it in the office, it would be much cheaper than gelatine and probably even cheaper than wet collodion, certainly so if unwashed emulsion were used. The saving gained in time would be a further economy. The process is not, however, in its present form an out-door process, and is more suitable for copying and studio work. I hope on some future occasion to be able to give fuller working details; my object at present being more to draw your attention to the capabilities and probable value of this interesting discovery of Dr. Albert's, as applied by Dr. Jonas, which appears as yet to have attracted very little notice in England.*

OUR ILLUSTRATION.

THE frontispiece of this issue of the BULLETIN gives a view of the interior of Mr. Dana's new Brooklyn studio. This beautiful addition to Mr. Dana's already extensive enterprises is worthy of the man and the art. See detailed description, page 240.

MRS. PORKLY—"I often wonder how people manage to understand each other in France."

Mrs. Gotham—"How absurd!"

Mrs. Porkly—"I don't think it absurd at all. Both my daughters speak French, and they can't understand each other."

* Since the above was written I noticed that Dr. Jonas' paper has been translated in full in *The Amateur Photographer* for July, 1891.

ANTHONY'S Photographic Bulletin.

EDITED BY

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Aided by ARTHUR H. ELLIOTT, Ph.D., F.G.S.,
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AMERICAN INSTITUTE—PHOTOGRAPHIC SECTION.

THE regular monthly meeting of this section took place on Tuesday, April 5th, Mr. Henry J. Newton in the chair. There was a very large attendance, the meeting being one of peculiar interest to both old and new members.

After the usual reports of committees, the Chairman called on Mr. Joseph T. Bedford to exhibit a piece of apparatus. The apparatus proved to be a gold watch, and the exhibition of it was conducted as follows:

Joseph T. Bedford: Will Mr. Mason please stand? It gives me great pleasure to be deputized to present to you a gift coming from the members of the Photographic Section, commemorating the twenty-five years during which you have held the office of Secretary of the Photographic Society and of the Photographic Section of the American Institute. We look with pleasure on the records of the progress which science has wrought in bringing to perfection an art which is destined to enter into all scientific research, and we are pleased, also, to note, in connection with these records, many articles in different publications in which you have, in many ways,

assisted in this progress. You have now filled office as our Secretary for twenty-five years, and it gives us pleasure to present to you this watch, the engraving on the inside of which reads: "Presented to Oscar G. Mason, from members of the Photographic Section of the American Institute, 1892."

After the applause attending the delivery of the watch had subsided, Mr. Mason attempted to reply, but was evidently overcome at the heartfelt expressions of goodwill. He tendered to all his sincere thanks, and expressed the great pleasure he had felt in all his associations with the section.

F. J. Harrison exhibited the Petite Kamarete, a hand camera carrying material for fifty 3 1/2-inch round pictures and measuring only 4 1/4 x 4 1/2 x 5 inches. Weight only 25 ounces. The film rolls are in front of the plane of focus, and this is the secret of the great compactness obtained. The little instrument is fitted with a rapid rectilinear lens, time and instantaneous shutter, and has an automatic punching device for preventing double exposures.

Mr. Newton then introduced Miss Catherine Weed Barnes, who read a paper on "Practical Slide Making." This was listened to with close attention, and the telling points marked by considerable applause. Miss Barnes adopted a somewhat novel, because rare, method of procedure, showing slides both good and bad, and pointing out the defects and good points in each. In her paper she advocated careful thought in lieu of blindly and doggedly pushing ahead. She pointed out that it was not possible to follow the rules of any authority, for we cannot all use the same tools, photographers having as many and as marked mannerisms as makers. She showed that it was practically impossible to obtain good slides from dense or underdeveloped negatives. Miss Barnes uses slow plates, and develops with eikonogen, sulphite of soda and carbonate of potash. The fixing bath always contains acid sulphite of soda. Miss Barnes goes to England this summer, and hopes to make an exhaustive study of the methods employed there. A large number of slides were passed through the lantern and commented on.

After a vote of thanks to Miss Barnes, the meeting adjourned.

HOBOKEN CAMERA CLUB.

THIRD ANNUAL DINNER.

It was a "goodlie companie" of fifty gentlemen which sat down before the tempting

array of "things delectable" in the large hall of the Hoboken Camera Club, to participate in the third anniversary celebration. Never before in the history of the club has such a jovial assembly of gentlemen graced the occasions of its birthday celebration as that which pleased the eyes of the members who attended. A table was arranged across the end of the hall, and at right angles to it, T-shape, another extended the entire length of the hall. Across the head of the table were seated the following members: President A. J. Thomas, George E. Mott, H. J. Kaltenbach, A. Beyer, F. A. Muench, President-elect; Alex. Beckers, A. Smith, P. Junck; and down on either side were seated the members and guests to the number of fifty, some of whose names we recall: C. L. A. Beckers, M. Dellner, H. H. Bennett, Leo Trickel, C. J. Delehey, Geo. Steil, Chas. Crevier, Geo. Pope, Ed. Ketcham, F. Child, C. Hirsch, W. Hartman, C. Sudhaus, A. Warden, W. Sachs, A. C. Ruprecht, G. Klinge, Geo. Steljes, A. W. Grasshoff, E. Adolphi, Otto Goll, Mr. Rabe, A. Ritter, A. Ruykhaven, L. Geils, E. C. Poggenberg, A. Wolff, Fred. Pansing, Mr. Payne, R. Beyer, C. Wilmerding, W. Beach, D. Judd, E. E. Woolley, H. Huntemann, Frank Adams.

The dinner was served by Koehne, who did his best, and his efforts were fully appreciated. At the finish cigars were ordered and the "feast of reason" began with a speech from A. J. Thomas, who said:

"I feel it incumbent on me to make a few remarks relative to our club and all those associated with us in the good work. We, as a very small body, established ourselves but three years ago, not thinking of what we could accomplish at the present time; but as membership grew and called for larger quarters, we took the most daring step that a handful of young men, without financial support, could ever have taken. Knowing, as we do, the history of photography, we are well aware of the important rôle it has taken by the amateurs in its development. What we have today, we are indebted, not to the professional, but in every sense to the enthusiastic and intelligent amateurs, and with that view we have worked with success, and time has shown it to have been a matter of enthusiasm as well as a matter of love. We would advise all our friends, those that have witnessed our work in the number of slides thrown upon our screen during the season, to encourage all those having a desire for photography, to join our institution, and I will guarantee, as the friend and retiring President, that they be well

taken care of. In conclusion, I extend my cordial thanks to the gentlemen who have honored us with their presence this evening, and hope that they will never forget the name of the Hoboken Camera Club and all its good features."

Emil Adolphi then rendered one of his excellent selections upon the piano, and was followed by an address by President-elect Fred. A. Muench, who said in part:

"Another year has passed and we are still alive, being just three years old to-day, and during this time wonderful changes have been accomplished by our organization. When first created, little did the handful of members dream that in two years they would occupy such a magnificent building, the finest of its kind in the country, photographically speaking. It is not generally known that Cupid has been responsible in a certain degree for the loss of some of our most valuable members during the past year, and it has been suggested that an amendment to our constitution be made that every new member signing such, pledges himself not to fall a victim to the love mania within the next three years. Speaking on the other hand, however, it shows how much our camera boys are sought after by the ladies. We camerists seem to be a phenomenal lot. We are possessed of positively negatives and negatively positives, over and underexposed, over and undeveloped, each in time with accelerator or retarder, after proper fixing and cleaning, should prove good plates for prints, prints which, by the due chloride of gold toning and final burnishing, would serve as photographs for our future. In taking the Presidency I shall work most diligently to add new members to our society, and to promote and interest our members in the art of photography, and in this I expect the individual support of every member."

Uproarious applause followed and interspersed the reading of the address. "Berceuse," by Hoffmann, for violin and piano, was excellently rendered by R. Beyer and Emil Adolphi. They were enthusiastically recalled and answered to the encore.

An address by Mr. A. Beyer then followed, which introduced Mr. Ed. Ketcham, a clever amateur magician, whose card manipulation, ring tricks and sleight-of-hand performance with coins caused a half hour of entertainment. He proved E. E. Woolley to have a remarkably big head from the great pile of numerous articles taken from his hat.

A pleasing duet with harmonica and piano,

by Frank Adams and E. Adolphi, was twice encored. A speech by "Papa" Beckers, the oldest amateur in the State; one from H. J. Kaltenbach, and one from the press, represented by ex-President Geo. E. Mott, of *The Observer*, closed the programme, and the early morning hours were then given up to flash-light pictures and general hilarity. It was a grand, good affair from beginning to close.

CALIFORNIA CAMERA CLUB.

CLUB TALK.

THE members of the California Camera Club are informed that hereafter on every Wednesday evening there will be a "Club Talk" at the club rooms. These weekly meetings have been instituted for the purpose and with the idea of enabling the members of the club to become better acquainted, of affording them an opportunity for the discussion of matters photographic, and for the general exchange, in an informal manner, of ideas, suggestions and opinions.

As at present contemplated, the "order of exercises" will be about as follows:

A paper on photography, previously prepared with great care by one familiar with the subject, will be read.

Immediately after the reading of the paper, the presiding officer will institute a discussion by calling upon some member present for an expression of his views concerning the matter treated of in the paper. After this the discussion will become general.

When practicable, photographic novelties will be exhibited at the meeting, and in the case of mechanical inventions, will be thoroughly explained. New developers will be explained, and their merits shown. If a new printing process is mentioned in the journals, investigation will be made into its practicability and beauty, and the results of such investigation disclosed at these meetings.

If talent is present, a little extempore musical entertainment will help fill up the evening.

And finally, there will be served a little refreshment in the way of sandwiches and the accompanying.

One result of these "Club Talks" is at once apparent. A member who visits the rooms on Wednesday night will be sure of finding some one in the room with whom he can have a little talk, and spend an evening with a photographic acquaintance.

If the Room Committee receives proper encouragement, in a very short time there

will be something going on in the rooms every night. Classes, lectures, "slide tests" and demonstrations will make the Camera Club a pleasant place to spend any and every night not otherwise particularly engaged.

Any suggestions concerning these meetings (or concerning any matter in their jurisdiction) will be thankfully received by the members of the Room Committee. A box has been placed in the rooms, into which may be dropped any written suggestions, and every member of the Club is especially invited to avail himself (or herself) of the opportunity presented. Any complaint which may be made will be at once looked into, and any commendable suggestion will be adopted.

CHARLES A. ADAMS,
GEORGE R. BUTLER,
C. F. CORMACK,
Room Committee.

OUTINGS.

The matter of "outings" is destined to be an important one in the future of the California Camera Club.

The Field Committee in arranging a series of ten or twelve semi-monthly "outings," hope to promote more interest in out-door photography, a better acquaintance among the members, and as a result, to gather new and fresh material for both print exhibitions and pay lantern shows.

The initial outing to Niles Canon, March 27th, was postponed until the weather becomes more settled. Five of the Club members who were willing to risk the storm had a very pleasant trip to Mill Valley, and some very fine negatives were made. The trip was a most enjoyable affair.

The next outing, April 10th, will be to San Mateo, and back to the Big Dam at New Crystal Springs. This is a very pretty trip and a large attendance is expected. All are invited and we trust that the members will do all in their power to make a success of the outing. Ladies and your friends interested in photography are welcome. Railroad fare, round trip, 75 cents.

If each member participating in these excursions will contribute to the Club two or three prints from each trip, the nucleus of a very valuable as well as a historical collection can be started.

A schedule of the outings will be issued shortly, and particulars of each trip posted on the bulletin board in the Club Rooms.

March 31, 1892.

W. J. STREET,
J. J. B. ARGENTI,
W. B. LEE,
Field Committee.

Bibliography.

LA FORMATION DES IMAGES PHOTOGRAPHIQUES, par A. De la Baume Pluvinel. Paris : Gauthier-Villars et Fils, 1891.

The principal chemical phenomena produced by the action of light and the scientific explanation of such action are well treated in the 200 pages of this little book by Mr. Pluvinel.

It is needless to state that a knowledge of these matters is indispensable to the intellectual worker in photography, and without them he can be little better than the veriest tyro.

A perusal of this volume will well repay the time spent and the trifling outlay required for its acquisition.

TRAITÉ PRATIQUE DES AGRANDISSEMENTS PHOTOGRAPHIQUES, par E. Trutat. Paris : Gauthier-Villars et Fils, 1891.

In the first volume the various methods of obtaining the small primary negative are fully discussed, as well as the kind best adapted for use in enlarging and the various methods of development employed.

The second volume treats more particularly of the production of the various kinds of enlargements by sunlight or artificial light, and contains a general résumé of all the known methods for their production. The volumes are small 12mos of 125 pages each, and are fully illustrated with diagrams and wood-cuts of the apparatus employed.

MANUEL DU PHOTOGRAPHE AMATEUR. Par F. Panajon. Paris: Gauthier-Villars et Fils, 1891.

As indicated by the title, the volume is dedicated to the amateur photographer, but it is easy to see that it is no production of an amateur pen.

Each line is methodical, clear and precise, and it is one of the best issues of the photographic library published by this house. It is a 12mo of 160 pages, and we commend it to our French readers, both amateur and professional.

METHODE PRATIQUE POUR L'OBTENTION DES DIAPOSITIVES. Par l'Abbé J. Coupé. Paris: Gauthier-Villars et Fils, 1892.

The author has designed this manual for the use of those who have taken photography seriously, and wish to learn the method of production of stereoscopic slides.

The first part treats of the necessary manipulations in order to obtain diapositives;

the second gives numerous formulas for developing, printing and intensification. It is a small 12mo of 50 pages, and in view of the recent revival of the stereoscopic camera is most timely.

DICTIONNAIRE PRATIQUE DE CHIMIE PHOTOGRAPHIQUE. Par M. H. Fourtier. Paris: Gauthier-Villars et Fils, 1892.

In this valuable work the author takes up the study of various chemicals used in photography, giving in each case their chemical formula, molecular weight, density, synonyms, solubility, physical and chemical properties, photographic applications, preparation, occurrence in nature, and the distinctive reactions which enable one to determine the purity of the product, and the method of using it in photography.

The book is divided into three parts, the first giving such general chemical theories and definitions as are necessary for a full comprehension of the succeeding pages; the second, the chemical dictionary proper; and the third, the general method of analysis necessary to determine the purity of the substances, various photographic formulas and rules for manipulations.

The work is an octavo of 350 pages, and we consider it a most welcome and valuable addition to our library, which we would find it hard to do without, once having had it in our possession.

LANTERN SLIDES AND HOW TO MAKE THEM.

By A. R. Dresser. Scovill and Adams Company: New York, 1892.

This is a well written little 12mo pamphlet of fifty-six pages, which treats of the various steps incidental to slide making. It contains a number of valuable hints and may be read with profit by the beginner.

OPTIQUE PHOTOGRAPHIQUE. Par A. Soret. Paris: Gauthier-Villars et Fils.

It is impossible in a small book, however concise, to entertain the more elaborate details of photographic optics. Accustomed most of his life to the demonstration of the principles of luminous phenomena, M. Soret has placed within the limit of the 130 pages of this small work the fundamental and more necessary principles underlying the construction, choice and use of a lens. The work is both interesting and timely, and is not of that ultra-scientific character which so often, in works of this character, prevents a wide perusal of them.

TRAITÉ PRATIQUE DE ZINCOGRAPHIE. Par V. Roux. Paris: Gauthier-Villars et Fils, 1891.

This work has been thoroughly revised and rewritten by M. L'Abbé Ferret, bringing the various processes and improvements up to date, and is practically a new work.

A study of its forty 12mo pages will give an excellent groundwork to the apprentice, and prepare him for some of the more elaborate works on this subject.

TRAITÉ PRATIQUE DE PHOTOGRAVURE AU MERCURE. Par A. M. Villon. Paris: Gauthier-Villars et Fils, 1891.

The various photo-chemical processes employed in the reproduction and multiplication of an original are innumerable. Perhaps one of the most curious of them is mercurigraphy, which the author gives in detail in the thirty small pages of this little work. The volume is well worth a perusal, and can be read with profit by all interested or engaged in the work of photographic reproduction.

LA PHOTOCHROMIE. Par Le Cte. E. Ogonowski. Paris: Gauthier-Villars et Fils, 1891.

Up to within a short time ago the methods of coloring photographs were seldom satisfactory and always superficial, such as the use of water colors, pastels or aniline colors. None of these were absolutely permanent, and usually obscured the details of the half-tones.

The author claims, in the compass of the 30 pages of this little work, to describe a method without any of the drawbacks of the former ones, by the aid of which it is possible to obtain photo miniatures of remarkable beauty.

PHOTOGRAPHIE DES COULEURS. Par Alphonse Bergot. Paris: Gauthier-Villars et Fils, 1891.

Up to the present the problem of photography in colors has remained unsolved. The discovery of M. Lippmann in this direction is, however, a most interesting one, making, as it does, progress on strictly scientific lines of procedure.

The author of this work has aimed to give a clear and succinct account of the interference theory of M. Lippmann, and shows how it may be utilized in producing results which partially fulfill the requirements of success in this direction.

The volume is a small 12mo of 50 pages, and is one which we commend to all our readers for perusal.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. Correspondents will please remember this. No attention will be paid to anonymous communications.

Q.—W. E. H. writes: Tell me in "What our Friends Would Like to Know" how to prevent the spots on the American Aristopaper treated by the hot water process described in your BULLETIN. Enclosed you will see two prints showing the defect. I had to throw away half of that printing. I used rain water which I had twice filtered. Also I have a catalogue from a Chicago house which quotes dry chloride of gold per 15-grain bottle at thirty-five cents, and the liquid chloride of gold per 15-grain bottle at seventy-five cents. Now why should there be that much difference in price, and is the gold reliable at thirty-five cents per 15-grain bottle?

A.—The spots you complain of appear to be reddish brown in color and similar to those caused by finger marks or grease spots. In the handlings of this paper before putting it in the toning bath the fingers should be cleaned free from grease. It is possible that the hot water might have been somewhat greasy, due to heating it in a kettle that was not perfectly clean or something of that kind. With regard to the chloride of gold queries, we think there must be some mistake as to the price of the dry variety; thirty-five cents is lower than we have ever seen it quoted. There is no reason why it should not be as reliable in one form as in the other, and we have no doubt that with any reputable maker you will find such to be the case.

Q.—W. C. S. writes: Please inform me, first, why insurance companies refuse to "write up" photographic apparatus? Second, can you give me address of company that will take such risks? I have only a small stock, never keep but a pound or two of collodion, bottle of alcohol and 4 or 5 ounces of magnesium powder at one time and the absurdity of the thing is beyond comprehension.

A.—We know of no reason other than that they have found it an unprofitable risk. We are told that statistics show a large percentage of fires occurring in photographers' studios and their experience has taught them

caution in this matter. It is not a personal question with them, but one of business policy. We are unable to give you the address of any company, but would advise your writing to some good insurance agent who would probably be able to place it for you.

Q.—A. F. H. writes: I have just made up a silver bath by O'Neil's method, and as my work must be first-class I would like full particulars regarding the use of it; renewing the bath, keeping it neutral or alkaline, what chemicals to use for that purpose, how strong bath should be in winter and summer by hydrometer, what to use to keep it clear, kaolin, permanganate of potash or what? Information about all these and all other particulars regarding the use of this bath successfully. Also full particulars regarding toning formula by same method, as follows:

Bicarbonate soda..... 1 large tablespoonful.
Acetate soda..... 1 teaspoonful.
Anthony's liquid gold. 1 bottle.
Water..... $\frac{1}{2}$ gallon.

How long before use should this bath be made up? Will it keep? How should it be renewed or does a new one have to be made up for each toning? Does it tone out much?—and all other particulars regarding successful use of same. Now, I have been using a French paper and formulas and want to use N. P. A. paper; but my work will not allow any experimenting, as I use from eighteen to twenty-four sheets three days in the week, and the balance of the week I am making negatives; I do all my work myself and so have no time to try the papers first.

A.—Floating the paper on your silver bath is to be done in the ordinary manner, also the drying, fuming and manipulation in the printing frame. To renew the bath add water and sufficient nitrate of silver to bring its gravity up to 50 degrees in summer and 60 degrees in winter. Bath should be kept neutral by the addition of carbonate of soda or a little ammonia. Sun the bath as frequently as possible to keep it clear. A little permanganate of potash serves to more fully oxidize organic matter when present. Filter as frequently as required. The toning bath may be made up just before use, if desired. It is always better to make up a fresh bath for each batch of prints to be toned, using only enough gold in each case for your present needs. As regards the toning out qualities this bath is very similar to most of the others. Experience with a few prints will tell you more than several pages of foolscap. It is impossible within the limits of this department to give you any fuller par-

ticulars with regard to printing and toning. Your own experience in this matter will not vary materially in using almost any really good brand of paper or toning bath formula.

Q.—C. A. S. writes: I have had sent me from London, England, some very nice photo prints, produced by the "autocapiste," a machine 10 x 12 in size, sold by the American and European Trading Company, 72 London Wall, E. C. Now, as you have the reputation of "knowing all about photography and somewhat more," in my dilemma I write to ask if you can tell me if such are on sale in New York City, and if so, where, and the probable price? I am a half tone etcher, and often have calls for something nicer, that can be colored easily, and these specimens please me very well, and I think of buying the machine.

A.—We are unable to tell you whether or not the machine to which you refer is on sale in this country, but would advise you to write direct to the American and European Trading Company of London, who will doubtless supply you with price list and any other information you desire upon the subject. We presume it to be something similar to Herr Warnerke's application of the collotype process, in which a sensitized bichromated film of gelatine is exposed under the negative, soaked first in water, and then for an hour in glycerine, 70 parts; ammonia, 3 parts; water, 20 parts. The tissue is then stretched upon a frame over a block of wood and rolled up with printer's ink. Impressions can then be taken off in the usual manner with results that are satisfactory. See BULLETIN, 1891, page 92.

Views Caught with the Drop Shutter.

A FIRE whose origin is wrapped in mystery damaged the Briggs block in Rochester, N. Y., to the extent of nearly twenty thousand dollars. Among the sufferers was F. A. BROWNELL, manufacturer of photographic apparatus, who estimates his loss at \$10,000, fully covered by insurance. Mr. BROWNELL had only one department of his factory in the burned building, and he has removed it to the first building north in connection with his regular factory, and will shortly have all branches in operation again.

WE note the incorporation of the WATERMAN COMPANY, Chicago, Ill., for the purpose of outdoor photography. Capital stock, \$500.

Incorporators, C. E. Waterman, S. T. Waterman and N. E. Waterman.

AN attempt was recently made to burn GEIST's photographic studio of Des Moines, Iowa. Before any great damage was done, however, the night watchman discovered the flames and put out the fire. Excelsior and rags saturated with kerosene were found outside the door. The police are still looking for the incendiary.

THE Secretary of State of Illinois has just licensed the WORLD'S FAIR PHOTOGRAPH EXHIBIT COMPANY of Chicago to exhibit photographs; capital stock, \$25,000; incorporators, M. J. O'Neill, John Ratigan and C. Clifford Corkett.

WIMMER & Co., of New York, were recently victimized by a swindler who represented himself as James F. Ryder, Jr., son of JAMES F. RYDER, photographer and art dealer, of Cleveland, Ohio. He entered their store and selected two paintings valued at \$750, offering in payment a check on the First National Bank of Cleveland for \$800. Upon receiving the \$50 change he departed, and has not since been seen or heard of.

JACOB HUBEN, of Springfield, Ohio, has recently taken out a permit for a two-story brick building which he intends erecting on High street at a cost of \$1,200. The building is to be occupied by his son, GUSTAVUS A. HUBEN, as a photo-engraving establishment.

WE learn with regret of the demise of P. LEIDIGH GROSS, the photographer, of Beth-

lehem, Pa. For the last year he has been a sufferer from two strokes of paralysis, the last of which seriously affected his speech. He was born in Bucks County, Pa., January 25, 1832, and at first learned the carpenter's trade. A few years after his marriage he moved to Bethlehem and started a photographic studio. In this business he met with considerable success, and continued in it up to the time of his death.

ERNEST J. LECOCQ, a photographer, of Portchester, N. Y., has brought suit against August Pottier, as executor of his father's estate, for 10,000 francs, the amount of an alleged legacy left to him by Mme. Lemoine to be held in trust by his father till he reached the age of twenty-five years. At the settling up of his father's estate the son bought an old writing desk at auction, and subsequently amused himself by reading some of the old correspondence it contained. In one of these letters Mme. Lemonine, an intimate friend of his mother's, announced that she had just placed 10,000 francs in the hands of Mr. Lecocq, to be held in trust by him until his son reached the age of twenty-five years. The estate claims that a certain sum of money received by the son on his twenty-fifth birthday was in payment of this legacy, which claim is denied by the son. The suit is now pending before John M. Bowers as referee.

H. SNOWDEN WARD, of England, the editor of *The Practical Photographer*, gave us a call recently, which we enjoyed very much. His visit to the United States was a flying one, and we regret that we had so short a time with him.

TABLE OF CONTENTS.

| | PAGE | | PAGE |
|--|------|---|------|
| AMERICAN INSTITUTE—PHOTOGRAPHIC SECTION | 250 | OUR ILLUSTRATION..... | 249 |
| BIBLIOGRAPHY | 253 | OUR LETTER FROM FRANCE, by Léon Vidal | 229 |
| BLISTERS OR NO BLISTERS, by F. E. Payne | 245 | THE CHEMISTRY OF THE METALS OF THE GOLD CLASS AND THEIR SALTS, AND THEIR BEHAVIOR IN PHOTOGRAPHY (continued), by P. C. Duchochois | 236 |
| CALIFORNIA CAMERA CLUB | 252 | TO LITTLE FALLS, by W. E. Partridge .. | 232 |
| DANA'S NEW BROOKLYN STUDIO..... | 240 | VIEWS CAUGHT WITH THE DROP SHUTTER..... | 255 |
| EDITORIAL NOTES..... | 227 | WHAT OUR FRIENDS WOULD LIKE TO KNOW..... | 254 |
| HOOVER'S CAMERA CLUB | 250 | | |
| LANTERN SLIDE METHODS, by Miss Catherine Wood Barnes | 242 | | |
| MR. IVE'S POLYCHROMATIC LANTERN SLIDES | 225 | | |
| NOTES ON SOME NEW RAPID ORTHOCHROMATIC COLLODIO-BROMIDE EMULSION PROCESSES (continued), by Colonel J. Waterhouse, S. C. | 247 | | |



PRINTED ON N. P. A. ALBUMEN PAPER.

OUR CONTEMPORARIES AT HOME.

Anthony
Billings

(EDGAR W. NEE, ENG.)

ENGRAVED AND COLLOTYPED BY GEO. G. ROCKWOOD, N. Y.

ANTHONY'S

Photographic Bulletin.

EDITORS :

PROF. CHARLES F. CHANDLER, PH.D., LL.D.

PROF. ARTHUR H. ELLIOTT, PH.D., F.C.S.

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No. 9.

HINTS ON MOUNTING PHOTOGRAPHS.

In this article we have endeavored to give a few of the most important points of manipulation in connection with mounting photographs, deeming that they might prove useful to some of the younger of our photographic brethren.

From among the various pastes and mounting preparations it is necessary to select the one best suited to our needs. For prints having a decided and seemingly irremediable tendency to curl when moistened, it is advisable to use a paste of considerable tenacity, as otherwise the tedious and unpleasant operation of "licking" down the corners and edges will have to be resorted to.

There are two golden rules in selecting a mountant that should always be remembered. First, to have the mounting medium fresh and not in a state of partial decomposition. Want of care in this direction has materially hastened the fading of many a print. And, second, to employ such a one as will not readily take up moisture from the atmosphere after being once used. Glue and gelatine are both somewhat open to this objection, but the employment of a very thin layer partially does away with the objection in these two cases, while, for some operations, gelatine itself is well nigh indispensable. Thus we prove our second golden rule by quoting immediately after it the exception: the first one should admit of no exception or deviation.

To prepare the glue, break it up into small pieces and half fill the glue pot with it, which should be placed in a second pot filled with boiling water. Add a little cold water to the pot containing the glue and place both on the fire. In a short time the glue will be melted; stir it up with a stick, when it should be of a thin watery consistence and just tacky when put between the finger and thumb. If too thick, add a little more water; if too thin, a little more glue. This mountant must be used hot and it is best to keep it immersed in its jacket of boiling water during the operation of mounting.

To make the gelatine paste, soak two ounces of soft gelatine in cold water and then pour on sufficient boiling water to make a rather thick solution. When

solution is complete strain through muslin into any convenient receptacle. When using, heat by standing the vessel containing it in hot water for a short time.

Starch paste we believe to be ordinarily the best of mountants and it is best prepared fresh as needed. A teaspoonful of the starch should be thoroughly wetted and stirred in a small saucepan with cold water, any lumps which may form being broken up until the mass resembles a cream; this is then poured into a half pint of boiling water, stirring constantly while adding. Allow to cool and strain through muslin. If it is desired to keep this for any length of time, a pinch of salicylic acid should be added to the boiling water and stirred until dissolved before adding the starch.

To prepare the prints for mounting it is necessary to first trim them. For this it is convenient to have a glass form of the desired size. These can be readily obtained of the dealers and insure square corners and uniformity among your trimmed prints. A cheap knife such as is used in the kitchen for paring potatoes and a rough sandstone are necessary adjuncts.

Lay the print down on a sheet of heavy glass, place over it the glass form, and trim with the before mentioned potato knife; the rough sandstone readily gives a sharp, somewhat serrated edge, admirably adapted for this purpose, and a quick movement of the knife produces a clean, sharp cut with no ragged edges. Care should be taken to hold the glass form firmly upon the paper while trimming as an additional precaution against tearing.

The prints should next be thrown into water, and thoroughly soaked, and then laid face down—one on top of the other—on a sheet of glass; much of the superfluous moisture can be removed by pressing down on the pile with the hand, and allowing the water thus squeezed out to run off by tilting up the glass.

If this is not sufficient, lay a clean towel over the back of the print just before applying the paste, and smooth it down; this will leave the surface only slightly damp and in excellent condition to receive the paste, which should be applied with a wide, flat brush in a thin, even coating, taking care that no lumps are left on the print before applying it to the mount, and that the edges and corners are well covered. In this way no paste is distributed on the face of the print, where it otherwise has an unpleasant habit of getting, and the whole operation can easily be conducted without any of the inevitable "muss" which so often unnecessarily follows many of our photographic operations.

Having applied the paste, insert the point of the knife under one corner of the print, gently raise it, and take hold of the print by the thumb and forefinger of each hand by the diagonally opposite corners. Care should be taken to grasp the print at some distance from the edges, to avoid removing the paste from them with the fingers, and having them curl up when dry. Touching the paste brush lightly with those fingers coming in contact with the pasted side of the print, is also a good precaution to take for the same reason. In taking hold of the print, the thumb should be inserted under the picture side, when it is very easy to reverse its position, and bring it to the proper one for applying it to the mount.

By a little practice you can hold the print in this way so as to almost let the two free corners touch the mount, and the proper placing can in this way be readily judged without the use of a mounting board.

In lowering the print upon the mount, let the diagonal passing through the

two free corners first touch, and then gently and gradually lower the other two corners. The print will now lie flat and even upon the mount without any air bubbles making their appearance. It is next to be squeegeed down and any paste exuding from the corners to be at once removed with a clean towel.

In the absence of a squeegee, a towel laid upon the face of the print and carefully rubbed down with the fingers from the center to the edges of the print will answer every purpose.

When dry the edges should be examined, and if they show any signs of curling, an ivory paper cutter should be carefully inserted and the edges of the picture slightly detached from the mount. In the opening thus formed a feather will be found very convenient to apply the paste with.

In some extreme cases it will be found necessary to dry the prints between towels under pressure of a pile of books or a letter press, to prevent the curling up of the edges.

Too hard a pressure on the squeegee will sometimes squeeze out too much of the paste and cause the above mentioned difficulty.

Blotters are not to be recommended for drying prints, as they are liable to leave "fluffs" over the surface, which, when dry, are difficult to remove.

Sometimes the prints are mounted face side down upon glass, and the finished picture viewed through the glass. In the case of bromide and chloride prints it is only necessary to squeegee the print, face downward, upon a perfectly clean sheet of glass and allow it to dry. With albumen prints it is necessary to give the glass and print a coating of the warm gelatine solution mentioned in the first portion of this article. Lay it on one side to set, and subsequently clean the glass with a clean sponge dipped in hot water, but do not touch the print itself.

A picture of this kind can be backed with rough drawing paper, which will appear as a mat, and the whole may be bound to another piece of glass, similar to the method employed in mounting lantern slides. This is an excellent way of using up spoilt negatives, and a most effective and permanent method of mounting.

Select your mounts with special reference to the subject, and give them plenty of margin, as it will greatly enhance the beauty of your picture. How many of us have seen an otherwise excellent and attractive print marred, if not totally ruined, by an inappropriate setting?

EDITORIAL NOTES.

THE officers of the Mystic Camera Club are : President, Joseph H. Wheeler ; Vice-President, B. D. B. Bourne ; Secretary, George S. T. Fuller ; Treasurer, John F. Wade.

THE Pittsburgh Camera Club go through the year under the direction of President W. S. Bell ; Vice-President W. S. Clow ; Secretary James H. Hunter ; Treasurer W. J. Hunker.

THE Newark Camera Club at a recent meeting elected : President, P. L. Thiery ; Vice-President, T. A. Hine ; Treasurer, F. T. Feary, and Secretary, D. S. Plumb.

IN a recent most interesting paper read by Professor Chandler before the Boston Scientific Society, the remarkable achievements of Dr. Max Wolf, a very wealthy young German scientist, were referred to in a most complimentary way. Dr. Wolf's method of photographing the heavens being to make exposures for several nights on the same subjects, by which means he has obtained impressions of several stellar bodies too faint to have been seen heretofore, including seven or eight new asteroids and a new comet, his researches in this direction have revealed some very interesting facts relative to comets. Dr. Wolf's instrument is not a large one and he is said to be very modest and retiring, but his discoveries are of much value to the science of astronomy.

THE Hartford Camera Club has arranged for an excursion to Twin Lakes on Memorial Day.

A FRENCH photographer has adopted a double shutter for his camera, with variable openings in each part, one of which he uses for foreground and the other for distance in his landscape.

AN admirable way to photograph small objects, such as specimens of natural history, insects, etc., is to stand the camera on end with the lens down and pointed through a movable shelf, the object to be photographed being placed on a glass plate, beneath which is a reflector of white paper; the lighting effected by this arrangement is of good volume, and the detail should be well brought out, without heavy shadows to interfere with it.

MR. E. GRIFFITH, Secretary of the Irvington Camera Club, lately underwent in Mexico an experience which came near proving disastrous to him. One day having come across a remarkably picturesque old ruin, he undertook to immortalize it by photography, when he discovered that he was in the custody of a small arsenal, supported and actuated by a thorough bred "greaser." On further investigations, instigated by the commandant of the district, it developed that Mr. Griffith had been photographing the penitentiary. After the loss of a half day's time he was finally allowed to depart under the escort of a squad of military.

WE are in receipt from Mr. John Carbutt of a film negative stripped from the original glass support by use of his fluid stripping medium, which shows beautiful printing qualities; the negative, while being extremely thin and flexible, is still tough and strong, and shows scarcely any inclination to curl. We have never seen a film removed more perfectly.

THE fifth annual exhibition of the Photographic Society of India will be held in Calcutta in December of this year. We notice the name of our good friend, Col. J. Waterhouse, S.C., Assistant Surveyor-General of India, as one of the judges.

THE California Camera Club gave its first social evening on the 13th of last month, which turned out a most enjoyable affair, and a trip around the bay was arranged for the following Saturday.

THE Lantern Slide Committee of the New York Camera Club has issued a circular to its members urging the uniformity of binding mats for all slides made by the club members. This arrangement is in use by many clubs who produce slides, and the club offers to furnish free of charge to those desiring them mat papers and labels with maker's name printed thereon.

WE would acknowledge with thanks, invitations to the first annual anniversary exhibition of the Photographic Association of the Wagner Free Institute of Science of Philadelphia, which, owing to distance and other engagements, we were obliged to forego the pleasure of attending.

Two new developers are reported from Germany as the results of experiments by Herr Schmidt, of Frankfort-on-the-Main. Both are obtained from para-amidophenol, and are called, for short, glycin and methol. Their full names are not nearly as innocent in appearance, being respectively para-oxyphenylglycin, and methyl-para-amidophenol-meta-kresol.

THE great success attending the Exhibitions of the California Camera Club has made it necessary for the committee to issue a circular to members, restricting the number of admissions which each member is entitled to. This action is found necessary in order to prevent overcrowding.

ALUMINIUM is recommended by M. Villon to take the place of magnesium for lighting, as he finds it to burn more slowly and without smoke. The powder is projected onto the flame of an oxygen jet, and the composition, which he finds to work with good results, is :

| | |
|--------------------------|------------|
| Powdered aluminium..... | 100 parts. |
| Lycopodium..... | 25 “ |
| Nitrate of ammonium..... | 5 “ |

THE third regular outing of the California Camera Club was laid down for the 24th of last month and included San Leandro and Lake Chabot. This club is showing great activity and interest in its work, and its success is a natural result.

THE following formula is said to produce a sensitized albumen paper which is desirable :

| | |
|------------------------|-----------|
| Nitrate of silver..... | 2½ drams. |
| Citric acid..... | 2½ “ |
| Alcohol..... | 2½ “ |

dissolved in four ounces of distilled water.

After silvering ten sheets of paper, 18 x 22, more silver should be added, in the proportion of—

| | |
|----------------------------------|-----------|
| Alcohol..... | 5½ drams. |
| Nitrate of silver (4:7)..... | 1 ounce. |
| Citric acid solution (3:10)..... | 3 drams. |

The citrate of silver, which is precipitated, should be kept for future reduction. The paper should preferably be silvered over a glass rod and blotted. The gold toning bath for this paper should always be freshly made.

THE annual exhibition of the Boston Camera Club held the end of last month gave every promise of being of remarkable interest, and we look for a more full report of it than has yet reached us.

THE important place which photography occupies as an adjunct to the sportsman's outfit is recognized by one of the leading sporting papers of this city, *Forest and Stream*, when they offer a series of ten prizes for photographs made in previous years, or in 1892, of such subjects as shall savor wholly of sporting life. The contest will remain open up to December 31 of this year, and the restrictions are only confined to subject. In the same issue that contains the announcement is also a half tone relief plate reproduction of a tarpon, which is of much interest and value as showing the tremendous strength of these gamy fish, and as an excellent piece of instantaneous photography.

LETTER FROM GERMANY.

BY DR. H. W. VOGEL.

Teleobjective Glasses and their Artistic Failures.—*Color-sensitive Plates and Afternoon Light.*—*Magnesium Light at Fancy Dress Balls.*—*Photographic Schools.*—*Developing Chloride of Silver Paper.*—So-called "*Monobrombrenztraubensäure*" as accelerator.

I HAVE reported to you already about the invention of the teleobjective glass by Miethe. It did not remain alone for any length of time. Steinheil proved that more than a year ago he constructed a teleobjective glass for the German navy, and Dallmeyer has also appeared with such a distance-lens. Which of the three is the best remains to be seen. None of them I have handled yet, and I doubt whether they exist in the market. So far only picture prints of such distant views have been submitted to me. They all show an artistic defect which it will be difficult to avoid. We are accustomed, for instance, on an architectural view with sharp front, to see that the horizontal lines show stronger the higher they are situated. Yes, we calculate even from this more or less strong inclination of the horizontal lines upon the height of the building. But in the pictures made with teleobjective glasses nothing is observed of such an inclination of the upper horizontals. They all appear flat, the perspective is missing which gives the picture a plastic appearance, it looks more like a plan made by the architect. In so far the pictures made with distance lenses have just the opposite defect from those made with wide angle lenses, where the architectural lines, on account of the too close standpoint, incline too strongly and offer an exaggerated perspective. We will, therefore, have to be careful in the application of the new teleobjective glass, and use it only where other means will be of no avail.

With regard to the application of color-sensitive plates, the opinion generally prevails that the hours in the forenoon and in the afternoon are more favorable for these than noontime. It is asserted that the atmosphere acted for the sun as a colored screen, and admitted principally the yellow and red light. But comparatively a very few photographic views are taken in sunlight. Even in landscape photography we require for the illumination of the shadow parts the light of the sky, the so-called diffused daylight. What is now the condition of this? It has been known for a long time that the daylight after sunset and later until

dusk becomes poorer and poorer in red rays. This fact is so striking that in twilight blue objects appear almost white—red and orange appear black. The assertion that the atmospheric light was toward morning and evening more favorable for views on color-sensitive plates does not agree with the fact that the quantity of blue light increases toward evening. The diffused light of the sky has, therefore, an entirely reversed condition to the sunlight. This admits principally the red and yellow rays toward evening better than the blue ones on account of their longer passage through the atmosphere. It is therefore a mistake to believe that the red and yellow rays act better in the evening than toward noon. Photographic experiments prove that by the absorption of the atmosphere they are more weakened in the evening than at noon. Thus one has, for instance, in a landscape toward evening, upon the shadow side of the objects a strong predominance of the blue rays from the light of the sky. On the sunny side there are more red and yellow rays, but in a considerably weakened condition. These are not favorable conditions for views with color-sensitive plates. If the sun is covered the conditions are still more unfavorable.

H. C. Vogel's, and particularly Crova's measurements, have demonstrated that in the blue and diffused light of the sky the blue rays predominate, that the value of blue rays increases with the setting sun. Crova made photometrical tests, the result of which was that forenoon and afternoon hours, with an excluded sun, are more unfavorable. But to prove this also photographically, the author has made a great number of experiments in Germany, Italy and Switzerland, in altitudes from 50 to 10,000 feet above the level of the sea during the last three years, which all confirm the above.

Magnesium light has become pretty popular during the past winter. There was hardly a fancy dress ball at which the "flash light" did not do its duty. The lamps most generally employed now are those in which the magnesium powder is blown through an alcohol or benzine flame. But they have to be carefully manipulated. One of my scholars had three of Schirm's blow-lamps for magnesium powder, and two of other construction with alcohol. These latter he placed on the light side of the model, the new one on the shadow side. But the shadow became always too black. This is easily explained. The new benzine lamps, which are very good, require a considerably stronger pressure than the old alcohol lamp; if all are subjected therefore to one pressure with the same bulb, insufficient air will pass through the new lamp, in consequence of which the combustion is a bad one. We have seen how Herr Schirm, in taking a group, started twelve alcohol lamps by one man (in each hand a bulb). Now he employs for twelve of the new benzine lamps two men. One hand directs only three lamps.

Much is complained of about the defective education of the young photographers nowadays. Although we have in Germany and Austria two well attended institutions, they are by no means adapted to the requirements. They should show thousands of scholars and have not yet a hundred attendants. In England it is worse yet. Warnerke says, at the meeting of the Photographic Society of Great Britain, January 26: There is nothing in England which could be compared with the grand technical high schools in Berlin and Vienna (Eder). We do not know who should teach us Lichtdruck in England. A party asked a photographer who works the Lichtdruck process if he could teach him the same, and received the reply: "That's my business secret, and I do not feel

like letting others into the secret." Mr. England, the well known photographer, was asked by the President if he knew where the collodion process would be taught. Mr. England's reply was: "No." That is enough said. They now contemplate forming such an institution. Under such circumstances it is not to be wondered at, that a pretty long discourse was held at the Photographic Society of Great Britain about distortion of lines in photography, more or less the same as the article about perspective in my text-book of photography. Many young photographers object to the instruction at these institutions being given during daytime, when they are at work. The Berlin Society for the advancement of photography therefore opened an evening school during the past winter. Particular attention was paid to art in connection with photography. A similar course will be introduced at the institution in Vienna during the coming summer. The lectures will comprise the most essential points about the development of art.

I. The antique : a, Oriental ; b, Classic art.

II. The Middle ages : Principal types of the Old Christian, Islamitic, Roman and Gothic art.

III. The later time : 1. Principal forms of Italian, German and French Renaissance architecture. 2. Plastic and painting in renaissance after the principal models shortly characterized.

IV. The seventeenth and eighteenth centuries, with a short reference to the ways of the more recent art.

The lectures will therefore have a more historic character, while the Berlin lectures adhere more to art principles in connection with Vogel's photographic *Kunstlehre* (art instruction).

Of particular interest are the new experiments made lately by Valenta upon the development of chloride of silver paper to obtain copies in a short time upon weakly printed pictures. The following advantages were obtained :

1. The time of copying, which is required for the completion of the picture, can be reduced to one-quarter or one-fifth ; 2. By application of magnesium light (1 to 2 grams magnesium powder) developed copies of a warm tone can also be obtained upon chloride of silver collodion paper ; 3. By application of certain developers color tones are obtained which cannot be got in the regular printing process ; 4. One is enabled with the aid of the developing process to obtain with extremely weak prints complete pictures.

Valenta recommends the following developer :

| | |
|--------------------|------------|
| Sulphite soda..... | 100 grams. |
| Pyro..... | 10 " |
| Citric acid..... | 11 " |
| Water..... | 1,000 c.c. |

The several ingredients are dissolved in water in rotation as mentioned above, and the clear, almost colorless, solution is directly used.

The developer works clear with the different papers and develops quickly. It colors very little even after prolonged use and is pretty durable in that condition.

The citric acid acts here as retarder and causes the picture to remain clear. The development is in most cases finished in a few minutes, and the pictures assume a warm, agreeable tone from brown-red to purple-black after toning and fixing. For toning bath he takes Lumière's.

This consists of:

| | |
|--|------------|
| Hypo..... | 200 grams. |
| Ammonium sulphocyanide..... | 25 " |
| Alum | 30 " |
| Acetate of lead solution, 10 per cent..... | 40 c.c. |
| Water | 500 c.c. |

The solution is heated upon the water bath to about 60 degrees C., when a quicker precipitation of the deposit results. It is then filtered and 100 c.c. of the same are mixed with 50 c.c. of water and 10 c.c. of a 1 per cent. chloride of gold solution. In this tone fixing bath the developed yellow-brown pictures assume a yellow tone, which very soon changes to brown-red and then to a handsome deep purple-brown.

Fixing and toning is finished in ten minutes. The pictures are now washed in running water and dried. When dry they show no change of the color tone. Experiments in the Royal Technical High School, Berlin, have shown that the pyro developer acted by no means unfavorably. The best results were obtained upon Buhler's Mignon paper, which is very poor in gelatine. The rodinal developer (para-amidophenol) has proved the best, for instance:

| | |
|-------------------------------------|------------|
| Para-amidophenol hydrochloride..... | 5 grams. |
| Sulphite of soda..... | 50 " |
| Carbonate of soda | 25 " |
| Water | 1,000 c.c. |

which can be diluted more or less, according to requirement.

As a curiosity, I might mention finally that a mysterious product, "monobrenztrauben saure," has recently appeared in the market. The same is said to accelerate considerably the preliminary bath of development. A closer examination proved it to be nothing more or less than common hyposulphite of soda.

BERLIN, APRIL, 1892.

[From our Special Correspondent.]

ENGLISH NOTES.

THE Camera Club Conference has come and gone. I believe it would be a greater success if it were held (say) a month later. It might then be accompanied by a "Spring Exhibition" of photographs, which would speedily rival the autumn show now held by the Photographic Society of Great Britain. Captain Abney made as usual a most admirable President; and his opening address was pregnant if brief. His statement that "researches of my own have shown that the general color of a landscape as seen by moonlight approaches closely to that of which the photographic plate takes cognizance," is worthy of note. From this it is plain that on fine moonlight nights we ought all to go prospecting for pictures, and the plan will doubtless be popular among young photographers of both sexes.

Mr. Willis is indefatigable in his endeavors to improve and perfect the platinotype process, which he was the first to publish, in 1878. He has now succeeded in so modifying the substances with which the paper is coated, as to be able to use the ordinary developing bath of potash oxalate *cold* instead of hot. In convenience alone this is a great gain, but there is a further gain in the power of rendering fine detail, and in cleanness of line. As an additional resource in this beautiful process, Mr. E. J. Humphrey has produced a lamp in which coal

gas charged with magnesium powder is blown through a ring-shaped burner, so as to give a hollow flame of cylindrical shape in contact inside and out with oxygen gas ; the intensely brilliant light so produced gives fully exposed platino-type prints in a few seconds. It is probable that several other uses will be found for this "artificial sun," which will be seen to be really a modification of the "blow-through jet" of the ordinary optical lantern.

Users of the compressed gases in cylinders—whether for the lime light or any other purpose—know well that the gauges used to indicate the pressure (and thereby measure the amount) of the gas in any cylinder, are liable to burst. Such gauges are made on the Bourdon principle, in which the gas is admitted to the interior of a curved steel tube. The pressure of the gas tends to straighten the tube, and this movement of the tube causes a hand to move over a dial, thus indicating the pressure. Mr. J. B. Spurge (working with Clarkson, the well known maker) finds that by filling the tube with glycerine all danger of its bursting is avoided ; the pressure of the gas upon the glycerine causes the latter to act upon the tube in precisely the same way as the gas itself would do, but without any danger.

I have lately seen some charming effects produced by the combination framing of large and small photographs. An amateur friend had obtained some hundreds of quarter plate negatives, as the result of a trip abroad. He had selected a few of these for enlargement, and had then framed each enlargement in combination with three or more of the ordinary sized prints. For instance, a broad walnut frame had a 12 x 10 enlargement in its upper part, below which (though separated from the large picture by a strip of moulding) were three small prints. In another example a 15 x 12 (vertical) picture occupied the center, and on each side (in a separate wooden frame, hinged on like a triptych) were four quarter-plate prints. Of course the small prints should have some connection of subject with the large one. Thus with a general view of a lake we may associate pictures of villages on its margins; a volcano in the center is fitly fringed by smaller representations of the damage resulting from its out-breaks, and so on.

The high-water mark of optical projection was reached in the lecture recently delivered at the Royal Institution in London by Sir David Salomons. The electric light was used for the main lantern; but a subsidiary lime light served to throw on the screen an "optical pointer" in the form of an arrow of light, which could be freely moved over the screen to indicate any part of the image to which the lecturer desired to direct attention. With a microscope attachment objects magnified up to 4,500 diameters were shown with fine definition ; and all the usual chemical, spectroscopic, etc., experiments were exhibited in a manner which I had not before seen in such perfection. In the well known experiment showing the decomposition of water by electricity the effect is usually marred by the image being inverted on the screen, so that the bubbles of hydrogen and of oxygen appear to be falling instead of rising as they would naturally do. The reason of course is that we cannot turn the little glass tank of water upside down, like we can a glass slide. This was remedied by the use of an inverting prism placed in front of the lantern, which brought the images of the objects depicted into their proper position.

What "size" is to be recommended as the best for general use in photography? After considerable experience I believe that the "half-plate" ($6\frac{1}{2} \times 4\frac{3}{4}$

inches) is to be preferred for all-round work. It is true that I have used a whole plate for many years ; but then I have rarely worked alone, and a large camera certainly weighs less when it is carried by *two* people. The half-plate is a well proportioned size, and plates for it are always to be had, which is more than can be said for the odd sizes, 4 x 5, and 7 x 5, etc. I also find the half-plate equipment to be practically as much as I can pleasantly convey on my tricycle with four dark slides, tripod, etc. The kit should not weigh more than 10 or 12 pounds. Such a camera ought to have an extension of not less than 15 inches ; and for lenses I should recommend a wide-angle rectilinear of 5 inches focus ; a rapid rectilinear of 9 inches focus ; and a narrow-angle landscape lens of 12 inches focus.

I am pleased to hear that it has been decided to change the date of publication of the "International Annual of Anthony's Photographic Bulletin" from midsummer to Christmas. The winter months are doubtless *the* months for reading ; and great as has been the popularity of the I. A. since its first issue four years ago, I anticipate an even greater run upon it, now that it will be issued at a season when the arm-chair and the fireside are preferred to the fields and the seashore.

Years ago it was quite the exception to find a worker who did not carefully study each picture upon the ground glass of his camera, and then carefully focus with the aid of a magnifier. But I notice now that many photographers rely upon a "finder" attached to the camera to give the extent of the view ; while for the focus they simply set the lens at a distance indicated by a scale of feet marked on the side of the camera. Now this system is all very well for work in crowded streets, or in any situation where speed and promptitude in securing a picture are desirable ; but I must protest against it for "serious" work. Not only do I think a careful examination of the subject as depicted upon the ground glass to be of great value as connected with composition ; but I invariably focus the principal object by the aid of a Ramsden eye-piece, which is the optical form of the excellent focusing glass sold by Dallmeyer. It is desirable always to perform this focusing after the stop which is to be used has been inserted. Some lenses, and good ones too, have a decidedly different focus when used with a small stop to that which they possess with open aperture. The use of a small piece of blue glass in the diaphragm slot is a distinct aid in studying the composition of any landscape, as it reduces the effect of light and shade to nearly the same as the ultimate result upon the dry plate. The same gain results from using a pair of blue spectacles, such as are sometimes worn by

TALBOT ARCHER.

GRACEFULNESS.

BY REV. F. C. LAMBERT, M.A.

ALTHOUGH it may not be easy (perhaps not possible) to give a concise or scientifically exact definition of what is meant by the term gracefulness, yet, for all practical purposes, the majority of us are agreed as to its general sense. Moreover, I think it is no rash assumption to say that we also agree that it is generally a desirable quality in a work of art. This being the case, a few moments may be profitably spent in considering any conditions favorable to its production or presence. Furthermore, in order that this note shall have a practical bear-

ing, it is proposed to limit the inquiry (for the present) to the consideration of animate forms, *i. e.*, figure and animal studies, with chief attention to the first named department of work.

Let us now suppose a bundle of figure studies are given to us with the request to sort them into two lots, *viz.*: Those showing gracefulness and the opposite (not disgraceful, but want of grace)—awkward—stilty, ungainly, strained. Observe that we have no one word which is a satisfactory antonym to gracefulness; but in the group of words generally used to denote the lack of that quality is found the clue to what is the chief condition of its presence, *viz.*, a minimum expenditure of force—economy of muscular power. Hence we so often couple the two words “easy and graceful.” Thus an “easy” or “graceful” attitude, turn of the head, pose of a limb, is one which can be retained for some considerable time with ease, etc., with a minimum of force and a maximum of comfort.

All great painters, however much they may differ among themselves as to their own methods of work, are practically at one in regarding classic sculpture as *the* school of study for the earnest student. To classic statuary, then, let us turn.

First, then, let us put in one room the “Dying Gaul” (sometimes called Gladiator), “Gaul Killing His Wife,” “Boy with Goose,” “Borghese Gladiator,” “Laocoon,” “Discobolos of Myron.” Surrounded now by works of various sculptors, periods and subjects, and while admiring and admitting their many excellences, we should not think of applying to any of these works the term easy or graceful.

On the contrary, their effect is one rather distressful than otherwise, as suggesting a strained or painful tension of muscle and nerve. Turning now from these, let us imagine ourselves surrounded by the seated figures from the east pediment of the Parthenon, the central group of the eastern frieze, “The Sauroctonus” (Apollo and Lizard), “Silenus and Infant,” “Aphrodite (Venus) of Cnidos” (by Praxiteles). Perhaps no one word better expresses the finest qualities common to these fine works than graceful. While being impressed by the unmistakable power of the artist, we, at the same time, feel that his work and his models are unconscious of any strain.

Leaving the ancients and their noble works, let us come down to men, women and children of our own times. It will soon be discovered that it is among the little ones that our most useful observations may be made. Note children at their play—if they have their old clothes on, and are young enough to be unconscious of being watched; how they move with the least expenditure of force. The attitudes they assume are those which require the least effort. They are so entirely absorbed upon their “sand castles” and “mud pies,” that their movements are practically unconscious, and nature, when left alone, always works with economy, *i. e.*, maximum product and minimum expenditure.

Note the pose and movements of young girls (when there are no “fellows” about to draw off attention); how they economize force and tend to flowing movements. This may well be seen when young girls are dancing together, how the two seem to swing together as one, rhythmically, *i. e.*, without any sudden stops or jerks. Lastly, watch men at manual work, how economy of force is taught by experience, and how an “old hand” (if not too stiff with

rheumatics) will turn his plow at the furrow end with ease and grace—the product of economy of force.

It is a common-place observation known of all men that those who go down to the sea in ships—water-craftsmen, fisher-folk—are picturesque and suggestive of gracefulness—a product of their ease of dress and economy of force. Something, too, may be learnt in watching men at their athletic games, observing that violent exertion tends to angular forms, while the periods of rest, “off guard” moments, when the muscles are relaxed, are characterized by flowing, “easy” lines. This may be easily observed in that most enjoyable out-door exercise, viz., skating. Here one may learn a complete lesson in gracefulness of form by observing the violent, muscle wrenching, fruitless efforts of the intrepid novice, who seems bent upon spending the maximum energy, but produces the minimum result, and comparing him with the adept, who apparently without any effort whatever seems to glide, curve and turn in a manner at once suggesting spontaneous movement. It will be noted that one great characteristic of all graceful movement is this flowing quality; how one pose melts by imperceptible shades into the succeeding, until that is arrived at requiring apparently no expenditure of force to retain.

Hence, in figure posing, it seems to suggest itself that, for graceful effect, there must be no conscious effort of keeping the pose. It should be so easy, comfortable, restful, that no strain is felt. I venture to think that much of the popular objection to the head-rest is due to the feeling that it is an “infernal machine” to keep the sitter in an uncomfortable position, whereas its true nature—a rest—seems to suggest that, when properly used, its presence should be “grateful and comforting,” and as welcome as a cushion or a foot stool. It is abundantly clear that if the pose is one of strain and effort rather than tending to rest and repose, the head and body rest becomes, in that case, a misnomer.

Turning for a moment to the animal world, one is tempted to say animals are born graceful (or the reverse), as men are born poets or the reverse. Thus we associate gracefulness with light, easy moving forms of the deer or greyhound, and the reverse with the rhinoceros, the pig, or the bull dog. Upon analysis it will here again be found that our ideas of gracefulness or its absence are intimately associated with the ease of movement, or its corresponding opposite, viz., effort. Hence, in taking the portrait of any animal, it is quite as necessary to bear in mind its characteristics as in the case of a human sitter. Thus one would not take a bull dog in a playful attitude, nor would the greyhound look quite himself if presented in an “on guard” pose.

To return to the lords and ladies of creation, it may then be said that, where gracefulness is felt to be a desirable quality, all ideas of effort, strain or tension must be removed and such a pose selected that it can be kept for the required time with ease and comfort, *i. e.*, with the least possible conscious effort. Examination of classical sculpture of the best period shows us what keen observers of nature these men of old time were. To notice one point only. All or nearly all the standing figures of Praxiteles are found to be resting chiefly on one foot and leg, the other leg being somewhat bent and used not so much as a support as to give steadiness and ease. Here is an illustration of just that slight disturbance of exact symmetry which possesses an indescribable charm. That the work of Praxiteles was true to nature, may be seen at once by simply

watching people who are standing about, but with their minds absorbed. As a matter of experience, it is found easier, *i. e.*, requires less conscious muscular effort, to rest upon one leg and steady one's self with the other than to divide equally the weight between the two, for, in this latter case, there is an observed tendency to swing from side to side. It will be noticed that only the very feeble or very stout stand equally upon both legs, and then they nearly always become a tripod by using a stick or crutch.

One may also notice the principle of counterpoise in all attitudes or movements of grace—how we swing one arm backward—as the leg on that side moves forward when walking, or how the head and leg turn away when an “outside edge” curve is struck with the other leg, and how the dancer compensates with the arms the rhythmical movement of the legs. Thus the lines of the figure flow one into another, forming an endless curve. The center of gravity is thus kept within the base of support without great effort.

The question, why do we prefer certain positions, which we term graceful, is one likely to suggest itself. The complete answer to this interesting query is too far reaching for present purposes, but it may suffice for the present to suggest its main drift, which seems to be somewhat as follows: In contemplating anything which is capable of being embraced by possible personal experience, it seems a common tendency to picture ourselves as depicted. Thus children say in looking at pictures, “I shouldn't like to * * * * I wish I was * * * ” Thus we, by a rapid and subtle mental effort, throw ourselves in imagination into the depicted pose, and participate in the effort required. Hence “easy” and “graceful” are intimately connected in our mental picture gallery. Thus to reset an old saw, “When effort (or strain) comes in at the door, grace flies out at the window.”

(From *Photographisches Correspondenz*.)

ABOUT LICHTDRUCK.

BY ADOLF BEYERSDORFF.

HAVING been connected for a number of years with some of the most prominent Lichtdruck establishments, I will try to demonstrate how the principal difficulties and defects in that branch of photography can be avoided, to some extent at least, as their entire removal, owing to local difficulties and bad atmospheric conditions, may never be effected.

The basis of Lichtdruck and necessary to good results is a suitable negative. Every Lichtdrucker (light printer) who wants to accomplish something excellent, and at the same time quickly and in quantities, must become thoroughly acquainted with the properties of a good negative, enabling him to obtain proper results.

For years and even to the present day the erroneous opinion prevails in many establishments, that a negative, which furnishes good prints on albumen paper must also give good results in Lichtdruck. The influence to which both are exposed differ so much that, by application of one and the same negative, different results will be obtained.

The difference between a Lichtdruck and an albumen print is the following: In Lichtdruck the copy of the negative produced by light first serves to transfer the print upon paper in a purely mechanical way, whereas in the albumen pro-

cess the print produced by light is to be considered as a result. Here the purpose is accomplished direct; in the other case the means is first given by which to gain the object.

An albumen print requires a brilliant negative; the lights and half-tones have to be sufficiently covered so that the depths of the picture receive the necessary strength without detriment to half-tones and high lights; the print should even be held somewhat stronger, because its strength is reduced during toning and fixing.

It is entirely different from this in Lichtdruck. Here the hardening action of light upon the chrome gelatine film has to be considered. Here the depths may be buried in their delineation while the high lights had not yet appeared. A picture would be obtained, black in the shadows, without delineation, too white in the high lights and without half-tones. It shows, therefore, that the negative for the printing plate of the Lichtdruck must be of such a nature, that the chrome gelatine will at no place be hardened by the light too much or too little during printing, that the depths may accept the necessary fatty ink, and that the half-tones appear during rolling without detriment to the high lights and white parts.

The erroneous belief to obtain more strength by prolonged printing, as in the albumen process, has a good many supporters yet. Unfortunately, by going beyond a certain degree of the hardening of the light sensitive film, it will be found that during printing it will not accept the color voluntarily and softly, and that one and the same color gives sometimes gray and flat, at another time deep and soft prints, so that one is obliged to suit the color with regard to the hardness or softness to the printing plate. This is a phenomenon which does not appear in any other printing process. The strongest hardening in the depths should never go so high, that a small quantity of water cannot be taken up yet, or a swelling of the film is still admissible.

The voluntary color acceptance of the printing plate is the main condition, by which it is possible to produce in the depths the velvet-like brilliancy and strength, and in the high lights the most delicate half-tones, which cannot be attained on an over-printed plate.

For Lichtdruck there is absolutely a softer, more delicate negative required than for albumen pictures; yes, it can be asserted, that a negative which gives flat and gray prints on chloride of silver paper, is the most suitable for Lichtdruck, if it is provided only with rich middle tones. When the lights and middle tones are fully exposed here, the depths will not be hardened too much by the light; the plate will accept the color voluntarily in all parts during rolling. Due regard should therefore be paid to rich middle tones for Lichtdruck negatives.

The printer may employ different means to produce lights upon the printing plate, if the same is only sufficiently rich in middle tones, but it is more practical to proceed with a suitable retouching of the negative.

So far allusion has only been made to half-tone negatives. In the reproduction of woodcuts, copper engravings, maps, etc., the negative has to be more evenly denser than a half-tone negative, but it is by no means necessary that the ground of the negative is covered so strongly, that a penetration of the light seems to be impossible, if the negative is only covered so much, that the open lines can be hardened sufficiently by the light before the ground commences to

become toned. A weak tone of the printing plate can easily be removed by rubbing the same with a sponge soaked in some etching liquid. Only for maps, where large white surfaces appear alongside of single delicate lines, it is required that the lines are clear and open and that the ground appears covered somewhat stronger.

If an operator makes relief plates for Lichtdruck purposes only, and zealously observes the results of the proof print, he will within a short time be able to judge with such a certainty that when making the negative he will seldom be in doubt about the strength of the same. The Lichtdruck printer should consider the negative as the foundation of his further labors, and give the preference to the production of new negatives in place of bringing those into use which lack perfection. He saves thereby more material and time than the production of new relief plates will cost, besides the disappointment to which he is subjected by handling an incorrect negative.

FIRST OR PRELIMINARY PREPARATION OF THE PRINTING PLATE.

Only two kinds of preparation are at present cultivated in Lichtdruck, namely, with waterglass and beer, and then with albumen. Both give equally good results. Beer and waterglass is preferred on account of cheapness. The doubtful quality of the waterglass is unfortunately a great evil sometimes, and it is advisable, if a good article has been discovered, to lay in a good stock, which, well corked and put in a cool place, will keep for years.

FORMULA I.

| | |
|------------------------------------|-----------|
| Silicate of soda (waterglass)..... | 5 parts. |
| Fresh albumen..... | 8 " |
| Ammonia | 1 drop. |
| Distilled water..... | 10 parts. |

The albumen is beaten to foam, left standing for several hours, and the liquid which runs off is mixed with the rest, to be filtered with care finally, avoiding bubbles, and at once after this it is ready for use.

FORMULA II.

| | |
|-----------------------------|------------|
| Beer, not too strong..... | 500 parts. |
| Silicate of potassium | 60 " |
| Caustic soda (solid)..... | 2 " |

These are to be mixed well and filtered. The solution will keep only for a short time (six to eight hours).

The room in which the preparation is made should have a temperature of at least 15 degrees C., be free from dust, airy and dry.

The well cleaned plate glass (afterwards printing plate) is dusted off with a brush, balanced in the left hand on the tips of the fingers; the solution is poured on in the center of the plate and spread towards the edges and corners with the fingers of the right hand, with the plate inclining toward the corner in question. The plate is then left to drip off on one corner, and placed, without further shaking, upon the rack to dry. Better still, particularly if the room has not the required temperature, to put the plates vertically in the Lichtdruck oven, which has been heated to 30 degrees, to dry. After drying the plates have a matt, milky appearance. They are placed, now warm, in very cold water (great contrasts of temperature preferred), where they are left for a few minutes, well washed, and put aside again to dry at ordinary temperature. If the preparation was correctly

executed, the plates (already after washing) show a strong rainbow color. This appearance is explained by the circumstance that the albumen film was cut into a finer grain by rapid cooling and washing. If the rainbow color does not appear or is incomplete, the preparation was not successful, and the plate as carrier for the printing film useless. This preparation, with waterglass albumen, is only for the purpose of making the chrome-gelatine adhesive to all parts.

If dust or other foreign substances are seen in the film during preparation, they are to be drawn to the edge with a needle.

These prepared plates have an unlimited durability, if kept in a dry place free from dust.

SECOND PREPARATION—THE LIGHT-SENSITIVE FILM.

| | |
|--------------------------------------|-----------------|
| Gelatine..... | 25 grams. |
| Distilled water | 275 " |
| Bichromate of potassium..... | 5 " |
| Bichromate of ammonia | 5 " |
| Caustic ammonia..... | 5 " |
| Alcohol..... | 10 " |
| Chrome alum (40 grams of water)..... | $\frac{1}{2}$ " |

The gelatine is left to swell one hour in 250 grams of distilled water, and then dissolved in a water bath at 40 to 45 degrees Reaumur. The bichromate salts, dissolved in 25 grams water, are now added under stirring, then alcohol and caustic ammonia, and finally the chrome alum, drop by drop, under constant stirring. It is also admissible to add the chrome alum at once to the water and let the gelatine swell therein. In general, this rotation should be observed strictly; by untimely addition a decomposition may easily take place. Chrome alum forms a very delicate grain, the plate accepts the color easily, and the deep tones print without becoming glossy. By the addition of caustic ammonia the solution will keep until the next day, even in summer, without the formation of a film with coarse grain. The addition of alcohol facilitates considerably the running of the solution. Caustic ammonia prevents besides this, to some extent, the decomposition of the gelatine by chrome alum. Some kinds of gelatine require even more chrome alum, particularly in summer; however, great care is here necessary, because if too much has been added hardly any grain will form and the plates accept too much color, giving the pictures an appearance without effect.

Particular regard should be had to the quality of the gelatine. The ordinary gelatine sold in the market is mostly useless for Lichtdruck. The so-called hard as well as the soft gelatine should be avoided, and only the medium hard is of service. At equal composition of the film, the printing plates with hard gelatine will show a completely glossy surface and glass clear shadows, and will give hard prints; those with soft gelatine have a cloudy and rough appearance and give flat prints. With medium hard gelatine, plates are obtained of a light matt appearance, giving spongy prints. The addition of bichromate of ammonia is increased with soft or flat negatives, and reduced or left off entirely with harder ones.

The addition of alcohol and caustic ammonia serves also to make the gelatine suitable for grain formation. It may be left off entirely if a gelatine has been found which answers the purpose, as above described from the medium-hard.

(To be continued.)

[From *Photography*.]

COLLODION AS A SUBSTITUTE FOR ALBUMEN IN POSITIVE PRINTING.

BY WALTER E. WOODBURY.

PART III.

IN a former part of this article I promised to show how the collodion emulsion already described may be used for other purposes than for making positive pictures upon paper.

In order to be better able to fulfill this promise, I have been making several experiments in this direction, and have succeeded in obtaining several highly satisfactory results. From several letters I have received, I am pleased to find that there are many who have benefited by the descriptions of this process given in the former parts, and who have carefully followed the directions given, and have obtained results more than satisfactory.

The process I am now about to describe is one that requires, if possible, even a greater amount of care and attention to details. The principle of the process is this—the collodion is spread over paper previously coated with a soluble substance; on dissolving this latter the collodion film leaves the paper, and may be transferred to any kind of material, such as glass, wood, china, etc. The process is similar to that known as the transferotype, but possesses the following advantages: First, the print is made without development; secondly, it can be given any tone possible to be given to a silver print; thirdly, the transfer is made by merely immersing in hot water; and fourthly, the film may be transferred onto any substance either way, obviating the necessity of a double transfer. With regard to permanency, there is no doubt that prints made in this manner, and transferred to a non-deteriorating substance, must be absolutely permanent.

I have already described the making of the collodion, and as it is precisely the same for both processes, it will be unnecessary to enter into it again.

We first of all procure some gummed paper; there are many qualities of this, and it is best to get the finest, that is, the paper which has been coated two or three times with the gum. The quality of the paper is immaterial, as it is only used as a temporary support, and the coating of gum prevents any impurities in the paper attacking the collodion sensitive film.

This paper having been obtained, we next coat it with the collodion and hang up to dry. When dry it is ready for printing. If our positive is intended to be transferred to china, wood, silk or other opaque substance, printing is carried out to the usual depth required for prints; but if for a transparency, it is of course apparent that it is necessary to carry on our printing much farther.

While the printing is proceeding, we can prepare the surface of the article to which the print is to be transferred; this is accomplished by making up a gelatine solution composed of five parts of gelatine dissolved in 60 parts of water, and filtered or strained through chamois leather.

We will describe first the method of transferring to glass. The glass, previously cleaned, is coated with our gelatine solution, and the same is allowed to set. We next take our print from the printing frame, and laying on the glass in the position required, immerse the two together in water, remove and squeegee the print down upon the glass again, immerse in the water, and the paper will detach itself, leaving the collodion film adhering to the glass. The gum is all washed away, and the print placed in the toning bath, toned and fixed, washed and dried.

If, when transferring, it is required to reverse the image, we place the print in water, and, the gum dissolving, the paper comes away, leaving the film coating on the surface of the water. All we have to do is to carefully place the glass under the film, and lift the two together out of the water, squeegee, and treat as before.

This process of making transparencies is admirably adapted for making lantern slides and stereoscopic pictures. The color of a warm silver print may be given in toning utterly impossible with developed transparencies. In transferring stereoscopic prints we just divide the two pictures with a pair of scissors, and having previously made a mark on one to avoid confusion, it is easy to transfer them to the glass, placing the right picture to the left and left to the right. We thus obtain a perfect stereoscopic picture correctly printed.

In transferring onto wood or china, we coat with the gelatine solution; if the surface is curved or uneven it may be applied with a brush. The process of transferring is the same in this case as in the other; a little more care is perhaps required.

As soon as the image is perfectly dry, it will be found to adhere strongly to the glass or material to which it is transferred, and it only requires coating either with varnish or a plain collodion in order to protect the film.

Another use to which this process may be put is the making of duplicate negatives without loss of detail. It is a well known fact that a negative reproduced from another negative is invariably lacking in detail and sharpness. The reason of this is very simple. The present low price of dry plates will not permit of plate glass being used; consequently, when the two glasses are placed together, there is a want of contact over nearly the whole of the surface; this naturally produces a slightly unsharp image, but when again the process is repeated, as is necessary in making a negative from a negative, the want of detail and definition is still more apparent. Now, in this process we avoid this in making the positive, and avoid it in making the negative, and consequently obtain a sharper image. Not only is the reproduction negative equal to the original in detail and definition, but it is possible, by careful manipulation in printing, to improve a negative and obtain from an indifferent negative another superior to it. The method of doing it, too, is so simple: we first make a print upon the collodion paper and transfer it to glass, wash and fix only; next from this, when dry, make another print, transfer to glass, fix and dry. No toning is necessary, the negative presents a yellowish color, not beautiful by any means, but its printing qualities are superior to the toned, and as the resulting prints are what we wish to be admired, the color of the negative is immaterial. At a recent meeting of an old-established photographic society, I was much surprised at the apparent difficulty among the members to answer a question found in the Question Box, *i. e.*, What is the best means of making a large negative a small one? Very many practicable and impracticable suggestions were made, but I think mine was the most novel. I proposed to do it with the aid of the collodion transfer process I have described. I have tried it and found it most successful, and I consider it superior to any other process.

I first, by any ordinary means, such as by an optical lantern or solar camera, make an enlarged positive, enlarged to the size required. From this positive I make a print upon my collodion transfer paper. Now, in doing this, I lose none of the detail. In making a negative on glass from this glass positive by contact printing, the loss of sharpness would be very considerable owing to the size of the glasses; but, as I have already stated, by my method I lose absolutely nothing. The sensitive film lies entirely upon the surface, the gum preventing it from sinking into the paper, so that this sensitive film lies in absolute contact all over. When my print is made it is a simple matter to transfer it to glass, and I have, after fixing and drying, the most perfect enlarged negative that it is possible to attain. Moreover, if two or more negatives were required, it would be a very simple matter to make them, once get a satisfactory positive.

I think that I have now said enough about this process to induce more to try it, and I feel sure that no one will regret having given it a trial, even if they should not have succeeded so well as I have done, for

'Tis better to have tried and failed,
Than never to have tried at all.

Lastly, I may mention that I have not lauded up this process with any motive than a purely philanthropic one. I do not claim to be the inventor of it, nor have I any interest in others making use of it. Having resided several years in Germany, I became thoroughly acquainted with the process, and noticing with what success it was carried on by the leading photographic firms and by amateurs, I saw no reason why English photographers should not be acquainted with the details of working to enable them to judge for themselves, and, if they desire, do likewise.

[From *British Journal of Photography*.]

ON THE UTILIZATION OF SPOILED PLATINOTYPE PAPER.

BY PROFESSOR W. K. BURTON.

PLATINOTYPE paper is such an expensive article now that one cannot afford to lose a single sheet of it that can, by any means, be made to do service.

A few days ago I came across a forgotten calcium tube in which I found ten sheets of platinotype paper 26 x 20 inches. They had been coated more than a year, and, as I had expected, when I tried to get prints on this paper working in the usual way, the result was that the whites were horribly degraded, and this pretty well the same whatever variations of the hot oxalate of potash bath I tried.

In my mind I had vague recollections that there were ways of getting good results out of platinotype paper that had become greatly fogged. There were somehow mentally associated, fogged platinotype paper, Mr. A. Haddon, and carbonate of soda. Also, I had a dim recollection that there was a note on the subject in some recent volume of *The British Journal Photographic Almanac*.

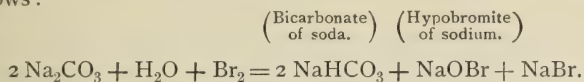
I set to to search for the latter. No slight task this, because the "table of contents" in *The British Journal Photographic Almanac* is so ingeniously buried among the advertisements that it generally takes less time to go through the whole matter in the volume, in search for any particular piece of information that is wanted, than to find the aforesaid table of contents. If there is any alphabetical list of contributors, I have not been able to find it yet. In spite of all this I found, on p. 492 of the volume for 1888, just what I wanted. It was a note to the effect that Mr. H. M. Hastings had purposely fogged platinotype paper in various ways (or rather had so treated it that it would have fogged if developed in the ordinary way), but had, nevertheless, got prints with pure whites by the use of a cold solution of carbonate of soda, with a trace of hypochlorite of potash added, as a developer, printing the proofs much longer than usual.

Unfortunately, there were no particulars as to the quantities either of the soda or of the hypochlorite that should be used; moreover, hypochlorite of potassium was a substance that I knew nothing of, and concerning which nothing was to be learned from the local dealers in chemicals. The first difficulty, however, could be got over by trial; the second was got over by an appeal to Dr. Edward Divers, F.R.S., who is always a friend in chemical need. A "chit," as we barbarously call a short note in this country, sent to Dr. Divers, elicited the following information: "The hypochlorite of potassium is not a salt which can be prepared in the solid state. A solution is made occasionally if wanted. The solution I send is sodium hypobromite, and I cannot think of a case in which you will not find it replace, without objection, potassium hypochlorite." The information was accompanied by a promise that some hypochlorite solution would be sent to me in a few hours.

Dr. Divers presently brought me the solution, and gave me, when I explained the object for which I wanted it, the following information: Hypochlorite of potassium cannot be prepared in a pure state, and even the solution always contains several other salts. Moreover, the hypochlorite is very unstable, especially under the action of light. It will, therefore, be necessary, every time that a developer is made up, to find out by

trial how much is needed of the solution for the particular batch of fogged paper that is to be worked.

Further, there can be very little doubt that a hypobromite would do as well as a hypochlorite, and that hypobromite of sodium would serve as well as hypobromite of potassium. In this case there would be the great advantage that the hypobromite of sodium would be produced in the developer by adding bromine water to it, the reaction being as follows :



There is the immense advantage that bromine water (a saturated solution of bromine) is a constant solution, so that it would be possible to find out, once for all, how much of it should be used.

All this was most useful information, and I intended to try the thing as soon as I had time. Meantime, I had the hypochlorite solution that Dr. Divers had kindly made me, and set about to use it.

I began by making several random shots, with the natural result of wasting both platinotype paper and the precious hypochlorite solution, and then set to find out systematically what strengths of solution should be used, and how long printing should be continued. There were three separate things to determine—(1) What strength of soda solution should be used? (2) What amount of the hypochlorite was needed to prevent fog? (3) To what extent printing should be carried?

The strength of soda solution needed could best be determined by making several prints and developing them with different strengths of solution. This was done (printing considerably more deeply than for development with hot oxalate of potash), the result being that there appeared to be considerable latitude allowable, but that a 5 per cent. solution seemed to act particularly well. Development took from about fifteen seconds to a minute, according to the nature of the negative and the depth of printing. The whites of these prints were degraded, but not so much as when developing with hot oxalate of potash.

To decide what quantity of the "dilute solution of hypochlorite of potassium" should be used, 40 ounces of a 5 per cent. solution of washing soda were made up, and a number of small strips of unexposed paper were taken. One of these was placed for a minute in the soda solution, and was then transferred to a hydrochloric acid clearing bath. Result : Decided fog. One dram of the dilute solution of hypochlorite of potassium was added to the solution, and a second strip was developed. There was no apparent improvement; but a second dram added began to give a reduction of the fog. The hypochlorite solution was added a dram at a time, a strip of paper being developed after each addition, till, when the ounce of the solution had been added, the strip of paper showed pure white after development. Another half ounce of the hypochlorite solution was added to give a "safe edge" in working.

It is to be observed that this process should be gone through every time that a quantity of developing solution is made up, if any length of time has elapsed since the hypochlorite was last used, on account of its instability and consequent want of constantness. Even if the constant bromine solution proves effectual, it will be advisable to vary the quantity used according to the amount of fogginess of the paper. The action of the hypochlorite is, I imagine, to oxidize any ferrous oxalate that has been produced from the ferric oxalate with which the paper is coated, back to the ferric state again, and the amount of hypochlorite added must be just enough to oxidize that quantity of ferrous oxalate that causes the fog before it has time to begin to reduce the platinum salt in the paper, but must not be strong enough to oxidize that slightly greater quantity of ferrous oxalate that represents fine high light detail. In fact, it is a case of striking a very fine balance; but, as the balance can be struck in a very few minutes by developing a few scraps of paper as described above, that is no great draw-

back. The indication of too much hypochlorite is, that the high lights are chalky and without detail, even if the paper has been very fully printed. If in developing a number of prints, there appears, after a time, any tendency to fog, more hypochlorite must be added; but the best way to work is to put a scrap of paper in the solution from time to time, leaving it there for two or three times as long as is necessary to develop a print, and to add hypochlorite if this strip fogs. The smell of the solution is a fair guide to the amount of hypochlorite present, after once it has been mixed up of the right strength.

To find out how deeply it was necessary to print, there was nothing to be done but to try several prints. It was found that with the quantity of hypochlorite of potassium that I had had to add to prevent fog with the particular sample of paper that I was using, it was necessary to print till every bit of detail that was wanted became visible. Development did not bring out a scrap of detail that could not be seen as the print came from the frame. The time taken for printing was fully as much as that needed for printing on albumenized paper.

By the time all these determinations had been made, two sheets of the paper had been used. As I wanted a number of the platinotype prints at once, I determined to print the whole of the paper, cutting it into quarter sheets of 13 x 10 inches, and printing from 12 x 10 negatives, washing the picture down a bit in nearly every case.

These were all developed in the quantity of solution mentioned above, a little hypochlorite of potassium being added from time to time as already described above. At the end of development the solution was of a deep red color, and, I presume, contained a considerable quantity of recoverable platinum.

Of the thirty-two prints then made, the following was the result: Four were over-developed. Here it is to be observed that over-development seems to be the fault that one is most likely to run into in working by this method. There are several reasons for this. In the first place, there is the well known fact that platinotype prints darken a little in drying; but there is the further reason that, whereas in working the hot bath process it is necessary to print to the exact amount necessary for the temperature of bath to be used, after which a definite result is got almost instantly, with the method I am writing of, the best results, from most kinds of negatives, are got by printing rather more than is necessary to get a dark enough print, if development be carried as far as it will go, and, by stopping development short at the right instant, watching the print closely as the detail comes up. This has the advantage that, by varying the tone of printing and that of development, different kinds of prints can be got from the same negative. There is the still further fact that the deep orange color that the whole paper assumes the moment that it goes into the soda solution makes judgment of the result a trifle difficult at first.

The difference in the finished print in the case of over-exposure and over-development is that, in the first case, there are both degraded high lights and over-deep shadows; in the second, there are only over-deep, or "mucked-up," shadows, the high lights remaining pure. Two prints were under-exposed, and, being left for several minutes in the developer, in the hope of bringing them up, were fogged in the high lights and the margins.

One print was spoiled through uneven coating of the paper.* One print was accidentally taken out of the frame too soon by mistaking one frame for another. The other twenty-four prints were all that could be wished.

* The paper was coated by myself. If an amateur coats his own paper, he is likely to lose a print now and again by uneven coating; but, if he is decently careful, the percentage of such loss should be very small, and I wonder that so few platinotype workers, so far as I can ascertain, coat their own paper. The process seems a formidable one when the instructions of the Platinotype Company are read, on account of the painstaking minuteness with which they have been written; but it is, in reality, very easy. It is easier to learn than to learn to float albumenized paper without getting either air bubbles or streaks of solution on the back, and the advantages are great of being able always to have fresh paper, and of being able to vary the quality of the paper to suit different kinds of negatives by varying the quantities of the "A" and "B" solutions of the Platinotype Company's sensitizer.

It seems to me that this process has decided advantages. In the first place, it makes platinotype paper, otherwise useless, available, and this without taking the usual precautions against dampness. In the second place, it is a great advantage to be able to see distinctly all the detail wanted in the printing frame. This is particularly so when clouds have to be printed in. Indeed, the advantage in this case is so great that if, on trial, it turns out that fresh paper can be used in this way without giving hard and chalky high lights, I should much prefer the method to the hot bath process. After sufficient practice, the fact that results can be greatly varied by variations in the times of printing and of development should be a great advantage.

Two things I wish yet to try, namely, whether fresh paper can be worked satisfactorily in this way, and whether bromine water will give the same results as hypochlorite of potassium. When I have investigated these matters I shall, with the editor's permission, report the results in the pages of *The British Journal of Photography*.

GAS CYLINDERS AND THEIR SAFETY.

[Read before the London and Provincial Society.]

BY F. A. BRIDGE.

THE use of gas in cylinders has now become so common that the public has ceased to regard it as fraught with any risk, and considering the immense number of cylinders now filled and emptied every week, the few accidents that have happened certainly justify the confidence hitherto reposed in their safety.

The explosions which have occurred of the cylinders themselves have been very few indeed, and I think I am right in saying that although, unfortunately, fatal consequences have always ensued, fortunately the cause of the explosion or bursting has been satisfactorily accounted for, and has in every case been due to putting oxygen into a cylinder already containing hydrogen, or *vice versa*.

As far as I am aware, no case has occurred of the bursting of a cylinder from over-pressure; they are actually tested to double the strength they are supposed to have to withstand. Stories are told of 15 or even 17 feet of gas having been pressed into a 10-feet cylinder; but it has never occurred to me, at least, if it has, the extra has never been charged for, so I am inclined to think it was not there. Accidentally or intentionally, very severe tests have been applied to cylinders by gas compression, tending to show that the ordinary knocking about they receive is not likely to cause much damage to them. Full cylinders have been known to fall from an upper window on to the stones below without exploding, heavy weights have been dropped upon them from a great height without doing any further harm than spoiling their outward beauty, which, it must be confessed, is not very great. We may, therefore, say that so far as the cylinders themselves are concerned, there is not much to fear, as, except accidentally, the ordinary user would never expose them to such tests as they are subjected to by those who make or fill them. We may here say that during their transit from place to place cylinders receive a great deal of unnecessary ill usage. Sometimes the gun-metal nozzles and valve pins become damaged in consequence, and stories have been told where they have become so loosened that the effort made to screw up the valve after use has caused the entire nozzle to give way. In one instance it is said that the nozzle of a cylinder in use out-of-doors for signaling purposes went up so high that it was *several minutes* before it came down again. Whether the man in the moon (had he so desired) could have put out his hand and caught that nozzle was not stated. Only recently, at one of the principal railway stations, a large cylinder was let down suddenly on the nozzle. The result was a waste of eighty feet of oxygen and a general scene among the passengers on the platform. These accidents, however, might have been easily prevented by putting the cylinders in boxes during transit.

What we really have to consider to-night is the bursting of gas regulators and

gauges, and our object is to find out, if possible, the cause of these accidents, and so, by taking due precaution, endeavor to make them as rare as possible.

First, then, the regulators. There are not many worthy of the name, the best, to my mind, being made by our friend Mr. Beard. The principal fault with other makes I have seen tried is either that they don't regulate, or, if they do, their action is so erratic as to make them unreliable. As to gauges, the simplest form is known as "Suiter's patent." Here you have no glass, and the worst that can happen is the blowing out the end of the tube and waste of the gas. The well known Bourdon gauge is much used and very useful, because it can be kept attached to the cylinder, and it is easy by its means to see from time to time how the gas is going. I need scarcely say it is not safe to use one of these for oxygen which has been used for any other gas. Very serious accidents have happened through this having been done.

Not many days since (as you are, of course, aware) an exhaustive inquiry was held to ascertain the cause of the bursting of both a gauge and a regulator, and this is really the reason the subject of "Gas Cylinders and their Safety" was chosen for our consideration to-night.

On Monday last I received from an old friend a letter commencing thus: "Dear Bridge,—Did we not waste an evening on Wednesday discussing the cause of the accident, and then only come to an erroneous conclusion? Had we waited another day we should have seen the note in *Photography* giving us the true cause. Now, I need scarcely say that this was what the late Artemus Ward calls 'rote sarkastik.'" This paragraph alluded to is as follows: "The inquiry into a recent fatal explosion of a gas bag has barely concluded when an explosion, which might have been serious, has taken place in connection with the use of cylinders. The explosion, however, was more due to the way the cylinder was handled than to any inherent tendency in itself to create disaster. At the meeting of one of the London clubs last week a new cylinder was about to be tested with a view to ascertaining its contents. The pressure gauge was screwed on, and then the tap was turned fully on too suddenly, the result being that the gauge was blown out and fixed itself in the ceiling, considerably startling those who were present. Had it come in contact with the person of either of the operators it would doubtless have been a serious matter to them. This accident need not, however, alarm cylinder users, but simply impress upon them the necessity of taking the precaution to allow the gas to enter the pressure gauge slowly, when no fear of such an untoward occurrence need be entertained."

If this paragraph is intended to refer to the explosion of a gauge and regulator in my hands at a recent photographic meeting, the communications of the gentlemen to whom the editor is indebted for this unofficial information should, in future, be taken with a much larger quantity of salt than appears to have been used on the present occasion. I say unofficial, because the meeting at which the accident happened was a private one, and any official communication must have passed through my hands. My opinion is, however, that my friend's sarcasm has been thrown away, and that the paragraph does not refer to us at all, but to some similar accident which had occurred elsewhere, and of which we shall perhaps hear more anon. Because, in my case, the cylinder was not a new one, the tap was not turned too fully or too suddenly, no portion of the gauge fixed itself in the ceiling, there was only one operator, and the accident could not have been due to the way the cylinder was handled, because the advice so kindly given in the concluding sentence was most carefully observed. I may here perhaps be allowed to remark that several absurd and exaggerated accounts of this accident are floating about. One gentleman has stated that he was blown several feet by the explosion. Now, I must confess that those in the immediate vicinity of the little darkroom in which the accident happened did retire with great alacrity, and many have been humming the old refrain, "We've left him alone in his glory for aught I know"; but the sudden withdrawal was not due to gas, but fright. The upward pressure, as I shall show you, was for the moment very great, but the lateral expansion

was not sufficient to disturb either the score of little things on the shelves of that small darkroom, or the folders that rested so gracefully on my nose. No doubt they speedily found themselves several feet away, but the instinct of self-preservation is strong, and possibly Mrs. Partington's son Ike was quite right when he said, "in railway accidents and such like, absence of body was better than presence of mind."

I am getting rather tired of repeating the story of the explosion. It seems to me as if every other photographer I have met, during the last fortnight, has asked for details, and I have been bound to tell him the truth and the whole truth. However, as I have to open the discussion this evening, and the subject has been selected in consequence of the accident, I will tell you, as briefly as possible, exactly how it happened.

Wishing to know whether a cylinder was full or empty, I relieved the gauge and regulator from the one just exhausted, and firmly screwed it into the cylinder, the contents of which I was anxious to ascertain. Turning the gas slowly on, the gauge immediately responded. I then turned the gas off again, and calling a friend (Mr. H. M. Hastings), I repeated the operation of turning on the gas. The needle of the gauge rapidly registered 120, went past that number, and before I could turn the gas off again, the explosion occurred. I still held onto the cylinder and endeavored to stop the waste of gas; the valve, however, would not act, and after inhaling more oxygen than was good for me in one dose, I came out of the darkroom—the way was quite clear. After a few breaths of air, as fresh as I could obtain in a room full of tobacco smoke, I went back and had another try, but it was of no use. When all the oxygen had escaped, I went into the darkroom again, lit the gas, which had been extinguished by the explosion, and looked around. The gauge had snapped short off at the stem and was lying on the floor, the dial was missing and the glass, of course, blown to atoms, the top of the regulator was imbedded in the ceiling, and the cover of the regulator case was missing.

On examining the connections it was found that the cone fitting the interior of the bull-nosed nozzle of the cylinder was partly melted; so was the neck of the cylinder itself; the end of the valve pin was also melted away. The oxygen had evidently fired in the neck of the cylinder. The end of the border in the gauge, unable to sustain the immense pressure, had burst, bulging the side of the case, forcing out the dial, and as I said before, smashing the cog glass to atoms. The fire had traveled partly along the tube leading to the gauge, but had not entered the gauge itself. It had traveled mainly in an upward direction; forcing itself up one side of the regulator, it impinged upon the side of the case, burst the India rubber bellows, blew away the top, partly melted the solder at the top of the cover and scorched the lacquer outside.

We now come to ask the cause of this, and the answer undoubtedly is: Oil in the neck of the cylinder. Chemists tell us that oxygen at high pressure brought into contact with oil, more especially oil which has become gelatinous or glutinous, will immediately fire. In the early part of the present year an article appeared in *The Nineteenth Century*, bearing upon this very subject in connection with gas cylinders, and describing almost exactly what occurred in the present instance. How came the oil there? that is the question. We have been informed that at one time these kind of pressure gauges were tested with oil, and this may have been one from which it had only imperfectly been removed; but the gauge had been in use quite two years, and as I said before, there was no trace of fire in the gauge itself. Oxygen compressors tell us they never use oil to lubricate the valves of cylinders, but the portion of the valve pin when withdrawn from this cylinder was covered with black oil, and the same thing was found in the aperture from which it had been taken. Curiously enough, too, I have taken the pins out of two other cylinders and these are both greasy. Gentlemen, I will not trespass further upon your patience; I only hope the discussion which follows will tend to clear up the question. The conclusion arrived at a week ago, when this matter was under consideration, was—Oil in the valve, but how it came there there is no evidence to show.

Several men of great ability and experience have been consulted on the subject, including Mr. Adolphe, Mr. Levy, Mr. Newton, Mr. Newton, Jr., Mr. T. Ottway, Mr. T. S. Freshwater, Mr. R. R. Beard, Mr. G. R. Baker, Mr. Murray (Bryn's Oxygen Co.) and Mr. T. North. As you know, I have had a good deal to do with oxygen in bags, gasholders and cylinders, and have been using the limelight almost daily for many years. The consensus of opinion is, as I have said before, oil in the valve.

Gentlemen, what happened to me, may at any time happen to you. Let us, therefore, endeavor to find out where this oil comes from, and we shall have done something toward preventing accidents.

In conclusion, I should like, if you'll allow me, to give you a few words of caution. When turning on or off gas in cylinders always hold them at arm's length. I invariably take this precaution. The top of the regulator in this instance passed within two or three inches of my head and imbedded itself in the ceiling. Had it not been for the precaution I have alluded to, it might have found a softer spot, and in that case I should not have had the pleasure of opening the discussion this evening.

[From Wilson's Photographic Magazine.]

"NO-GOLD" TONING BATH FOR BOTH ARISTOTYPE AND ALBUMEN PRINTS.

AN "unknown quantity" and an "unknown solution" are never so satisfactorily "taken" as are quantities and solutions about which we are fully informed; yet when we see good results come from them, we lose our reluctance to give them a trial and become reconciled to their use. With this sort of feeling we consented, a few weeks ago, to undertake some experiments and investigations with a "no-gold toning solution," which came to us headed by the now world renowned nom de plume "Columbian," accompanied by a quantity of prints upon "Aristotype" paper of various brands, and by others upon albumen paper.

"Toning solutions without gold" were no new thing to us, and a combined "gold and hypo" toning solution was advocated many years ago. But we had learned to discard them both, because of their supposed injurious nature—because of the "want of stability of the prints" toned with them. A longer acquaintance with hyposulphite of soda has taught us how to overcome the poison of its fangs by a little careful treatment, so that now we are not so particular not to use a mixed toning solution, and we are quite satisfied that the "Columbian No-Gold" mixture, whatever it may be, is about to become very popular, if not generally in use, not only because of the charming effects secured by its use, but on account of its extreme economy. In these days of "low prices," the latter advantage will not be overlooked. We have made no chemical test to discover the ingredients of this new and really wonderful combination, for if we did and could reveal the make-up of the "unknown solution," there would yet remain the "unknown quantity," or the special formula of preparation. We are, therefore, content to give thanks to the party who has found out the way, gladly accord him his reasonable profit to pay his costs for making it known, and accept the sayings and the improved results with the consistent hope that all who wish may succeed as nicely with it as we have done.

A formula which, we are assured, has been worked out with great care, is printed upon the label of each bottle, and out of all fairness, those who use the mixture should likewise adopt the formula given.

A few words upon the manipulation may prove acceptable. Messrs. E. & H. T. Anthony & Co., the American trade agents, supply us with two bottles of solution labeled No. 1 and No. 2.

FOR ARISTOTYPE PAPER.

To make a toning solution of about a quart, proceed as follows :

No. 1.

| | | |
|---------------------|---------------------------|------------|
| Solution No. 1..... | Contents of a bottle (say | 4 ounces). |
| Hypo | 4 | " |
| Water..... | 20 | " |
| Dissolve. | | |

No. 2.

| | | |
|---------------------|---------------------------|------------|
| Solution No. 2..... | Contents of a bottle (say | 4 ounces). |
| Water..... | 4 | " |
| Dissolve. | | |

After these mixtures are dissolved separately, add No. 2 to No. 1 (the order is particular). When they are thoroughly mixed, add powdered alum, two ounces, and filter.

The prints are immersed without previous washing, and toned to the shade desired. Washing in running water for one hour should follow.

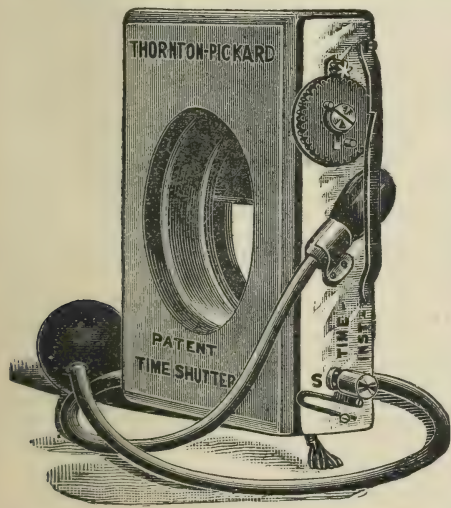
FOR ALBUMEN PRINTS.

Prints on albumen paper must be washed first in three changes of water (no acid bath) and then fixed in a plain hypo bath. They are then toned to the desired shade (in the same mixture as for "aristotype" papers) and again washed in changing water.

So far as we have gone we give all the particulars. All who desire to economize and to secure the best results can, at but little cost, make trial of the formula for themselves. We shall welcome to our pages further information (and we suggest that it be generously given) and notes of experiments, be they successful or otherwise (though there should, indeed, be no otherwise about it), for the advantages involved are worth our common care. The advantages for our readers must be our plea for thus extendedly bringing it to their notice.

NOVELTIES IN APPARATUS, ETC.

We have had the opportunity of making a thorough test of the merits of the THORNTON-PICKARD TIME AND INSTANTANEOUS SHUTTER, of which we subjoin a cut. It is to our mind an ideal shutter, doing all that is claimed for it in a



manner which leaves nothing to be desired. It is constructed on the "roller blind" principle, is simple, and not liable to get out of order. With it exposures ranging from several minutes to the quickest "snap" can be taken with equal ease. The speed of the shutter is regulated by the speed knob, *S*, every turn increasing it. For time exposures the tension should be set at a minimum. A pull on the tassel sets the shutter, and a squeeze of the ball releases it. When the pointer is set at time, the shutter remains open after squeezing the ball until the pressure is released, thus avoiding a double compression. The almost entire absence of jar is an additional good feature.

THE COLUMBIAN TONING AND FIXING SOLUTION is one which is sure to meet with public favor. Not only is the cost but slight, due to the absence of gold

or other expensive chemicals, but the results obtained by its use are certainly excellent. Pictures toned by this solution cannot be distinguished from those with which gold has been used. The solutions are in two bottles, which require mixing and the addition of hypo and alum, as directed. Exposure for several days to bright sunlight of a picture toned in this way produced no visible fading or change.

A NEW lens flange which we have recently examined seems to us to be worthy of attention. The principle involved in its construction is similar to that involved in the well known iris diaphragms.

When screwed in the camera front it adapts itself to any size lens by simply twisting the outer frame, and securing it, when set to the proper size, by a lock nut. This obviates changing your camera front or screwing on a new flange every time the lens is changed.

A MIXTURE of para-amidophenol with hydroquinone has recently been placed upon the market under the name of paramidoquinone, and seems to combine in it the virtues of the latter as well as the vigorous action and speed of the former.

Plates developed by it come up quickly, have plenty of density, and are free from fog, while the detail is unsurpassed. If there is anything on the plate, this developer will certainly bring it out. It is equally efficacious with bromide paper, and is free from stain.

ANY of our readers desiring fuller information concerning novelties noticed in this department, should address the publishers of the BULLETIN, who will gladly furnish them with it.

FOR THE BENEFIT OF THE FRATERNITY—THE KEY TO BETTER PRICES.

To the Editors of Anthony's BULLETIN:

"Romans, countrymen and lovers! hear me for my cause." I desire to give you the benefit of a new design in portrait mounts. It is called *The White Rose Portrait Panel*.

This new style is rapidly taking the place of the cabinet for bust portraits and sitting figures. Its proportions are similar to an oil portrait.

I have had this style in mind for over three years, but, until the past winter, have had no time to give it expression.

I have no patent nor desire any.

I wish others, besides myself, to reap the benefit of this unique size.

It will give an impetus to waning business, and tone up your trade.

The cabinet is all right for standing figures, but for a bust portrait or sitting figure there is no size or style that approaches *The White Rose Portrait Panel* for harmony with the portrait itself and general appearance.

In our circle of patrons it has enlisted the unanimous praise, "*It is one of the most unique sizes and designs for a portrait ever offered.*"

It has been thoroughly tested among a list of critical patrons. We had these mounts made to order by A. M. Collins Manufacturing Co., Philadelphia, and recommend you to obtain specimens from them. We have them made

in light and heavy stock. No. 198, light; No. 46, heavy. The first are for single mounted, and the second for double beveled work.

The White Rose Portrait Panels readily command from \$5 to \$6 per dozen, according to mounting. This in a small town and in the dull winter months at that.

In large and fashionable localities from \$7 to \$9 a dozen would not be considered a fancy price. Why, the very name alone takes from the start. The name "cabinet" has become so utterly common, that a new title and design for small portraits is welcome.

Here is a feature that will give your portrait trade a push. It will prove the key to better prices, provided good work accompanies it, and judicious advertising is done.

Rest assured there is no scheme in connection with this.

Write to A. M. Collins for specimens; and should you wish to see the mounts with portrait upon them, apply to us; we will furnish a few specimens for a trifling consideration.

We take from six to seven orders for the W. R. P. P. to one for cabinet. To be sure, there are no albums as yet for this size; likewise there were none for the cabinet till it had been *out* for a time.

Some one will certainly reap a harvest from this new style, manufacturers of albums as well as the consumers.

All are welcome to the use of our electrotypes, now in possession of A. M. Collins, for imprint of Rose design on backs.

We have described The White Rose Portrait Panel in brief; now let it speak for itself.

Sincerely yours,

CHARLES P. MARSHALL,

Specialist in Elegant Portraiture.

Address all inquiries to Marshall Bros., Cazenovia, N. Y.

The prints submitted by Mr. Marshall fully bear out all he claims for the new departure. They are unique and artistic.—EDITORS.

OUR ILLUSTRATION.

THERE are few men better known to American readers than "Bill Nye." Who has not laughed at his droll stories, and yet how few of us have seen anything more than the miserable newspaper caricatures of this inimitable humorist! We are glad to be able to give our readers such an excellent likeness of him as that which forms the frontispiece of this issue of the BULLETIN. We are also glad that our good friend, Geo. G. Rockwood, of New York, had the good fortune to use his skill upon such a popular subject for our benefit.

OLD LADY—What's that awful smell?

FARMER—That's the fertilizer we're puttin' on the field yender.

OLD LADY—For the land's sake!

FARMER—Yes, 'em.—*Puck*.

SHE—Will you write to me on your return to college?

HE—Why—er—you know I can't write.

SHE—Oh, I don't expect you to write brilliantly, or amusingly; just write as you talk.

ANTHONY'S Photographic Bulletin.

EDITED BY

Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.,
and a corps of practical assistants.

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Advertisements should reach us not later than the Saturday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, six, twelve or twenty-four issues.

E. & H. T. ANTHONY & CO., Publishers.

THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

The annual meeting of the society was held Wednesday evening, April 13th, the *President*, Mr. JOHN G. BULLOCK, in the chair.

In accordance with the resolution passed at the last stated meeting, the appointment of the following Special Committee on Standards was announced: Prof. Benjamin Sharp, George W. Hewitt, Theodore H. Luders, Lewis T. Young, and William H. Walmsley.

The monthly report of the Board of Directors announced the death of four active members since the last meeting, as follows: Messrs. Thomas Hockley, Louis Reichner, Jr., William L. Springs, and William A. Cheyney.

The following persons have been elected to active membership: George W. Norris, James Douglas Blackwood, M. Grahame Hallock and Allen G. Miller.

At the conversational meeting, March 23d, American Interchange Lantern Slides from Chicago and St. Louis were shown.

The annual report of the Board of Directors was read by the Secretary, and was a notable record of the prosperity and usefulness of the society. The principal events in the history of the society were recited, among which may be mentioned the following:

April 5, 1891. *Discussion*: "New Developing Agents." *Paper*: "A Suggestion for a Possible Method of Identifying the Colors Photographed," by J. F. Sachse.

May 13, 1891. *Demonstration*: Toning of Omega Paper, by C. E. Hopkins (a visitor).

June 10, 1891. *Paper*: "On the Prelimi-

nary, Secondary and Supplemental Lighting of the Photographic Plate," by J. F. Sachse.

October 21, 1891. *New Room*, at 10 South 18th street, first occupied for meeting.

October 28, 1891. *Illustrated Lecture*: "Photography in the Arctic Regions," by Prof. Benj. Sharp.

November 11, 1891. *Paper*: "Preparing Strong Ferrous Oxalate," by Casper W. Miller. *Competitive Exhibition* of Hand Camera Lantern Slides.

January 13, 1892. *Discussion*: The Permanence of the Undeveloped Image on Dry Plates.

January 21, 1892. *Competitive Exhibition* for Honor Pictures.

February 3, 1892. *Illustrated Lecture*: "Switzerland—The High Alps," by C. L. Mitchell, M. D.

February 10, 1892. *Paper*: "The Fading of Silver Prints," by Ellerslie Wallace, M. D.

February 23, 1892. *Public Exhibition* of Lantern Slides, the work of members.

March 9, 1892. *Paper*: "Photographic Objectives," by W. A. Cheyney. *Discussion*: Recent Appliances for the Optical Lantern.

March 15, 1892. *Illustrated Lecture*: "Picturesque Norway," by C. L. Mitchell, M. D.

April 5, 1892. *Illustrated Lecture*: "From Philadelphia to the Grand Cañon of the Yellowstone," by Frederick E. Ives and Wm. N. Jennings, with natural color photographic projections.

During the year six members had been lost by death; 34 new members were elected; the total number now on the roll being 200, or about the same as at the date of the last report. In view of the fact that the annual dues had recently been doubled, this fact was considered very gratifying.

The increased interest and usefulness of the stated meetings was shown in the fact that the average attendance had increased twenty-five per cent. over that of last year.

The Special Committee on Entertainments reported that the three public entertainments in aid of the Home Fund had been very successful, resulting in a net profit of \$525.61.

Action on the amendment to the By-Laws proposed at the last stated meeting, to increase the initiation fee of active members to ten dollars instead of five, resulted in the defeat of the resolution.

The election for Officers and Directors for 1892-93 resulted as follows:

President, Joseph H. Burroughs; *Vice-Presidents*, Edmund Stirling, Charles R. Pancoast; *Secretary*, Robert S. Redfield; *Treasurer*, George Vaux, Jr. *Directors*: John C. Browne, Charles L. Mitchell, M. D., John G. Bullock, William H. Rau, Frederic E. Ives, Samuel Sartain, George M. Taylor, John Carbutt.

An illustrated lecture was given by Dr. Benjamin Sharp, his subject being "A Trip Through the West Indies," which was followed by a demonstration of the process of making lantern slides with gelatine dry plates. Adjourned. ROBERT S. REDFIELD,

Secretary.

Mr. Frederic E. Ives requests that the following correction should be made in regard

to the discussion reported at the stated meeting of the Photographic Society of Philadelphia on March 9th. He is reported as saying that "ordinary optical glass is opaque to some of the violet rays," but what he actually said was that it was "opaque to some of the ultra-violet rays."

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. Correspondents will please remember this. No attention will be paid to anonymous communications.

Q.—N. H. J. writes: Enclosed find a print that I am not able to find out the cause of the light spots on. So if you will please let me know through the BULLETIN I will be ever so much obliged.

A.—Judging from appearances, the paper used in making your print has been floated upon a foul silver bath. By foul we mean one containing considerable suspended matter. We would advise you to sun it, add a little permanganate of potash and filter it each time before use, and neutralize the acid, if any is present, with a little carbonate of soda. Best of all, make up a new bath at least 60 grains strong and start fresh. Make bath slightly alkaline and float 2 to 2½ minutes. When dry fume 20 minutes and you are ready for printing. Remember that cleanliness is absolutely necessary to success in silvering and printing, and that your silver solution should be frequently sunned and filtered. Specks on the surface of the liquid will always cause white spots on your paper such as you complain of.

Q.—C. H. T. writes: A short time ago I purchased for my darkroom a 16-ounce glass graduate. I carefully washed it in ordinary cold water and set it on the shelf upside down. Four days afterward I found it separated in a circle at the 8 ounce mark. I carefully glued it together with stratena and again placed it upside down on the shelf, and to-day I find it separated in a circle at the 12-ounce mark. It has had no blows, and nothing touched it while on the shelf. When I fastened it together with stratena it seemed good and strong. Can you form any idea of the cause of its breaking twice in the same manner? In neither case was it touched from the time it was placed on the shelf bottom side up until I found it broken in both circles. To all appearances it seemed to be a good strong graduate, and, as I will have to get another

one, I would like to know how to avoid the danger of "spontaneous" breakage.

A.—The occurrence which you mention is not a very uncommon one. It is generally due to very deep and perfect cutting of the graduating marks and subsequent poor and insufficient annealing. It is probable that it was subjected to some rather considerable changes of temperature while on your dark-room shelf, accompanied, perhaps, by a jarring or sudden vibration. We have known of similar phenomena, however, without even this slight provocation, and when the change in temperature has been only a few degrees. So far as inspection goes, it is practically impossible to tell one of these graduates from any of its neighbors not similarly affected.

Q.—G. L. P. writes: Some time ago I understand that you published in the BULLETIN a process for solar printing by a silver developing process, in which milk was used as a sizing for its paper. Can you refer me to the number which contains the above formula, or can you furnish the formula, or is it published in any form which you can furnish me?

A.—You will find the article referred to in your query on page 95 of No. 3, Vol. XXIII, of the BULLETIN. It was written in answer to a query from C. & P. and contains all the necessary formulas and details of manipulation for this process.

Q.—D. A. W. writes: Please give through your columns the best receipts and methods for working N. P. A. and Eagle papers. I used to get fine results on either of these papers with my old receipts, etc., but they do not seem to work as well as they used to do.

A.—On page 255 of our last issue (Vol. XXIII, No. 8) you will find an answer to A. F. H.'s query, which is very similar to your own. In it we think you will find all the information you require and as it is of such recent date we hardly deem it necessary to reprint it here. See also article on silver printing by Ellerslie Wallace, page 41-46, Vol. XXIII, No. 2, of this paper.

Q.—F. L. L. writes: I am a constant reader of the BULLETIN, and seldom, if ever, ask any questions. Will you kindly tell me in the next issue what kind of make and size lens, in your opinion, is the best for making photographic copies from size 8 x 10 to 14 x 17 inches?

A.—We know of no lens more suitable for the kind of work you mention than Dallmeyer's "Rapid Rectilinear." The size catalogued as 8 x 10 will be suitable for use within the limits named in your query if the smaller stops are used.

Q.—D. L. P. writes: Will you please give me the best formula you know of for obtaining black tones on albumen paper? Please answer through your next BULLETIN.

A.—To start with, a deep, strong print is required. Do not give them a long preliminary washing, as it is claimed that the presence of free nitrate of silver in the paper helps to give a black tone. Use the following bath:

Gold..... 3 grains.
Water..... 30 ounces.

Add a few drops of a saturated solution of carbonate of soda. This bath is ready as soon as made up, but will not keep. Print deeply and tone until desired color is reached. Fix and wash in the usual manner.

Q.—J. du S. T. writes: Kindly explain in your BULLETIN how prints can be copied on plates, the bottom of which are not plane, and on glass globes, curved surfaces, etc.?

A.—A transparency from the original negative is made on a stripping plate. The picture thus made is developed in the usual manner, and the film transferred to the object desired, which may be either a plate or glass globe, as you indicate. Some care and practice is necessary to prevent the films from showing wrinkles or fullness on drying, which should be so carried out as to prevent distortion.

Q.—W. B. W. writes: I would be glad if you would inform me, through the BULLETIN or otherwise, who the subject of the photograph is which appeared in Vol. XXII, No. 23, of your paper?

A.—The photograph to which you refer was a likeness of Miss Lillian Russell, a well known and very popular actress of this city.

Views Caught with the Drop Shutter.

THE photographic studio of Mr. W. CAL. BROWN, on Main Street, Farmville, Va., was destroyed by fire a short time ago. The flames had secured such headway before they were discovered that the entire building was gutted. Mr. Brown puts his loss at about

\$3,000, \$1,250 of which is covered by insurance. The origin of the fire is unknown.

AMONG the names of some recently licensed corporations appears that of the GATES PHOTOGRAPHIC Co., Chicago; capital stock, \$10,000; incorporators, George F. Gates, Bertram A. Atquator and Robert M. Todd.

AN incendiary fire which broke out late at night in Sedalia, Missouri, badly damaged the building owned by B. W. HUEY, photographer. The second story, which he occupied, was partially destroyed, and the loss on the building will amount to about \$800, fully covered by insurance. He was not so fortunate, however, with his apparatus, most of which is a complete loss, which will amount to nearly \$600. This was insured for something less than \$300.

WE have recently learned of a new crayon scheme for defrauding the unsuspecting public who are unwary enough to fall into the glib canvasser's trap.

The solicitor's statement is to the effect that upon paying him a fee of 50 cents and signing a contract in his book, you are entitled to an enlargement of any photograph you choose to send without further cost.

It subsequently transpires, however, that it is necessary to purchase a frame from the same company at an exorbitant price before work upon your picture is commenced. This information is received about a week after the agent's visit, upon a postal card, which invites you to call at the office and select your frame.

MR. E. O. ZIMMERMAN, the well known photographic merchant of St. Paul, has entered the political arena, having been elected alderman of the second ward of his city. We send congratulations and hope that many photographers will become equally as good citizens.

WE regret to note the death of William Bradford, the well known marine painter, who died of apoplexy. His pictures of the Arctic regions were well known, and admired in both Europe and America.

TABLE OF CONTENTS.

| | PAGE | | PAGE |
|---|------|---|------|
| ABOUT LICHTDRUCK (<i>to be continued</i>), by Adolph Beyersdorff..... | 270 | LETTER FROM GERMANY, by Dr. H. W. Vogel..... | 262 |
| COLLODION AS A SUBSTITUTE FOR AL- BUMEN IN POSITIVE PRINTING—PART III, by Walter E. Woodbury..... | 274 | "NO-GOLD" TONING BATH FOR BOTH ARISTOTYPE AND ALBUMEN PRINTS..... | 282 |
| EDITORIAL NOTES..... | 259 | NOVELTIES IN APPARATUS..... | 283 |
| ENGLISH NOTES, by Talbot Archer..... | 265 | ON THE UTILIZATION OF SPOILED PLATINOTYPE PAPER, by Professor W. K. Burton..... | 276 |
| FOR THE BENEFIT OF THE FRATERN- ITY—THE KEY TO BETTER PRICES, by Charles P. Marshall..... | 284 | OUR ILLUSTRATION..... | 285 |
| GAS CYLINDERS AND THEIR SAFETY, by F. A. Bridge..... | 279 | THE PHOTOGRAPHIC SOCIETY OF PHILA- DELPHIA..... | 286 |
| GRACEFULNESS, by Rev. F. C. Lambert, M. A..... | 267 | VIEWS CAUGHT WITH THE DROP SHUT- TER..... | 288 |
| HINTS ON MOUNTING PHOTOGRAPHS..... | 257 | WHAT OUR FRIENDS WOULD LIKE TO KNOW..... | 287 |



Perseus

ANTHONY'S

Photographic Bulletin.

EDITORS :

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PROF. ARTHUR H. ELLIOTT, PH.D., F.C.S.

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THE FIFTH ANNUAL JOINT EXHIBITION.

ON May 2d last was inaugurated at the galleries of the Boston Art Club and under the auspices of the Boston Camera Club the fifth annual joint exhibition of the New York, Boston and Philadelphia societies.

It was a distinct success, seldom have we had the pleasure of chronicling one so complete, and well may the committee in charge, now that their labors are over, rest on their oars and complacently receive the merited congratulations which are certainly due them. Exhibitions of this sort are stimulating to the public interest and a revelation as well to those who are not active workers in the photographic field. Possibilities hardly dreamed of by the many are here shown completed by the touch of some master hand and mind. Harmony between subject and treatment is inculcated as a cardinal and primary principle, and nature's choicest treasures are wrested from her and faithfully reproduced by the unerring skill of the artist photographer, till the visitor's very breath comes in short, quick gasps of ecstasy and delight. Nearly 125 exhibitors sent in their 1,500 contributions, which filled some 650 frames. In addition, there were 130 slides and 75 transparencies.

The exhibitors were distributed among the different clubs as follows: 32 from the Boston Camera Club, 22 from the Society of Amateur Photographers of New York, and 10 from the Photographic Society of Philadelphia.

The exhibition remained open through the evening of the seventh with an unusually large attendance.

Each evening exhibitions of slides were given and on two evenings prize English slides contributed for the occasion by the American Lantern Slide Interchange were shown.

The Board of Judges consisted of the three well known artists, J. M. Gaugengigl, F. P. Vinton and C. Howard Walker; men chosen especially for their

ability to judge of the artistic quality of the pictures shown, for which it was desired to make this exhibition especially noticeable, not only for art's sake alone, but as well for a refutation of the too prevalent opinion that photography is little more than a process in which tools and chemical agents work almost automatically, producing lifeless results with but little of æsthetic or artistic selection, composition or treatment. In making the awards, each contributor's entire exhibit was judged as a whole, and the decisions made accordingly. The medal of honor was designed by Mr. L. S. Ipson, of Boston, and cast by Shreve, Crump & Low Company of the same city. The head is that of Daguerre. Those fortunate enough to receive the medal were : Francis Blake, of Auburn-dale, Mass.; William S. Briggs, of Boston, Mass.; Arthur R. Dresser, of Kent, England; Hamilton Emmons, of London, England; Benjamin Kimball, of Boston, Mass.; J. P. Loud, of Boston, Mass.; George M. Morgan, of Boston, Mass.; Charles R. Pancoast, of Philadelphia, Pa.; Lyddell Sawyer, of New-castle, England; Alfred Stieglitz, of New York; F. D. Todd, of Edinburgh, Scotland, and Clement Williams, of Halifax, England; twelve in all.

Diplomas were awarded to John W. Alexander, of Yonkers, N. Y.; Henry W. Belknap, of Boston, Mass.; Charles I. Bery, of New York; James L. Breese, of New York; John G. Bullock, of Philadelphia, Pa.; Miss Emilie V. Clarkson, of New York; W. S. Clow, of Philadelphia, Pa.; Miss Emma L. Coleman, of Boston, Mass.; C. Court Cole, of Oxford, England; Charles H. Currier, of Boston, Mass.; William H. Dodge, of Lowell, Mass.; John E. Dumont, of Rochester, N. Y.; O. A. Eames, of Boston, Mass.; Geo. H. Eaton, of Boston, Mass.; Miss Sarah J. Eddy, Providence, R. I.; I. W. Evans, of Wolver-hampton, England; William A. Fraser, of New York; Wilfred A. French, of Boston, Mass.; H. M. Grisdale, of New York; Martin J. Harding, of Shrews-bury, England; H. A. Latimer, of Boston, Mass.; John C. Lee, of Boston, Mass.; J. S. Mason, of Boston, Mass.; Clarence B. Moore, of Philadelphia, Pa.; George A. Nelson, of Lowell, Mass.; Robert S. Redfield, of Philadelphia, Pa.; Edward T. Sherman, of Yonkers, N. Y.; Miss Elizabeth Almy Slade, of New York; John L. Stitmins, of Cincinnati, O.; W. O. Witherell, of Boston, Mass., and Mrs. James Osborn Wright, of New York, a total of thirty-one, or forty in all, counting both diplomas and medals. In departing from their former custom of granting diplomas and medals by classes to the present plan of equal merit for artistic and technical excellence, the club has fallen in line with the latest ideas on exhibitions, and set an example which will probably be followed in the future.

Mr. Blake's collection of instantaneous views were well worthy of mention, the amount of detail secured in so short an exposure being truly remarkable.

They included several of the well known tennis experts, Hall, Sears, Dwight and Pettit, taken in every conceivable attitude. He also represented pigeons in flight and a locomotive running at the rate of forty-eight miles an hour.

Mr. William S. Briggs' forest studies showed effects of light and shade marvelous in their delicacy and beauty, well chosen, and better executed, if that were possible.

The bromide enlargements of Mr. Arthur R. Dresser left little to be desired.

The originals were made with a hand camera, and the work was done on rough paper. The one entitled "Ploughing" was especially effective.

Mr. Hamilton Emmons' views in Egypt were well chosen, and the lighting

was extremely soft and effective, giving an almost ideal representation of the hazy, dreamy atmosphere of the land of the Pharaohs.

The portraits of Mr. Benjamin Kimball showed a novel effect in both lighting and treatment that was as unusual as it was pleasing.

Several landscapes and mountain scenes shown by Mr. J. P. Lord were of remarkable depth and brilliancy.

Mr. George M. Morgan's portrait of Mr. Kimball was undoubtedly a masterpiece and worthy of the highest mention.

Several scenes of a rural character, by Mr. Charles R. Pancoast, of Philadelphia, were of a most pleasing character and worthy of high commendation.

Mr. Lyddell Sawyer's cruel works was particularly well posed and executed. It represented the masculine victim of a five-o'clock tea, an object worthy of deep sympathy.

A collection of platinotypes by Mr. Alfred Stieglitz were excellent specimens and worthy of more than a passing glance.

F. D. Todd, of Edinburgh, had an artistically framed and well executed series of pictures, of which the "Village Smithy" was, perhaps, the best.

A large green carbon print of a sea view, by Mr. Clement Williams, of Halifax, made a very striking picture which attracted considerable attention.

Among the exhibitors receiving diplomas we would notice the figure and cloud studies of Mr. Alexander, of Yonkers, and the "Studies in Draping and Posing" shown by Mr. Charles I. Berg.

Mr. Breese's carbon portraits were certainly worthy of high praise, as were also his platinotypes.

Several of Mr. Bullock's prints were happily selected and the subjects pleasing.

Miss Emilie V. Clarkson's "Moonlight on the Racquette" was a beautiful piece of lantern slide work.

Miss Coleman's bromide enlargements were the chief feature of her exhibit, as were the interiors shown by Mr. Cole.

Mr. Dumont's portraits, as usual, were most effective, but showed a little too much retouching for our individual taste.

The cloud effects in some of Mr. Eames' lantern slides were admirable.

In fact, the features of individual excellence were so difficult of separation among the many admirable prints exhibited that we must forbear to particularize further.

Padding in this exhibition was conspicuous by its almost total absence, and there were no objectionable features to mar the distinct success scored by this, the fifth and best joint exhibition ever given by these three societies.

EDITORIAL NOTES.

SOME interested friends of the "International Annual" having circulated false statements to the effect that it was not to be published this year, we would state here that we are informed by its publishers that they have never for a moment entertained a thought of its discontinuance, but that, acting on the advice and request of many of its readers, they have decided to issue it in December hereafter, instead of in June as before. We believe, from the position the "International Annual" holds in the photographic literature of the day, that it will be a long time before it will be discontinued.

A NOTE, signed by certain prominent French astronomers, has caused considerable comment on the other side, lately, as it tends to throw a doubt on the value of negatives of stellar bodies made on isochromatic plates, owing to the fact claimed by them, that in such negatives each stellar disc is surrounded by a strong aureole, the result of chromatic aberration produced by the passage of the red rays through the lens. Such being the case, it is said the diameter of the stars is increased and their relative magnitude distorted.

THE recent exhibition by the Brooklyn Department of Photography, made up from slides by its members, was of great interest to all who participated. The views were of a wide diversity of subjects, but were shown by Mr. Alexander Black of the *Brooklyn Times* in such a manner that the transition from Egypt to Coney Island was as natural and realistic as could have been wished. Mr. Black clearly outdid himself on this occasion.

THE Albany Camera Club at their meeting on the 6th inst. viewed the slides sent by the California Camera Club in the regular interchange set, with much pleasure. These views are spoken of in the highest terms by those who have seen them. The Albany Club are about making a collection of prints from some of the best negatives of its members, for the purpose of embellishing their rooms with them.

An excellent method of abstracting the gold from an old sulpho-cyanide bath, is to add a small quantity of hydrochloric acid and sulphate of iron. The precipitate thrown down is gold and hydrated oxide of iron, which should be dried and purified.

THE Newark Camera Club gave a delightful exhibition of slides on the 7th inst. from the work of its members. A special car has been chartered by the club for its outing on Decoration Day.

A SERIES of three lectures by Mr. P. C. Duchochois, before the New York Camera Club, is announced, the first of which took place on May 16th; the two remaining will follow shortly. On the 23d a lesson was given by Miss D. M. Snyder on retouching.

It sometimes happens, as on a journey, that it is desired after development to temporarily fix the negative. This may be accomplished if the plate, without being washed, is simply drained from the developer and then immersed for a half minute or a minute in a 2 per cent. solution of tartaric acid; it should then be washed and dried.

This is said to work well with all developers but iron. Another formula for the same purpose is said to be :

| | |
|-------------------------|-----------|
| Alum | 33 parts. |
| Acetic acid | 33 " |
| Potassium bromide | 33 " |
| Water | 1,000 " |

With this bath the plate is washed, and dried, and then kept till a convenient time to fix permanently.

WE learn that Mr. H. McMichael, of Buffalo, has just received a diploma for his exhibit before the Royal Academy of Fine Arts at Vienna. This—in view of

the fact that of 4,000 exhibits offered, only 600 were accepted, and that from the entire number of pictures sent from America only 3 per cent. were included in this 600—is praise of the highest kind. Our congratulations to Mr. McMichael.

THE California Camera Club propose to entertain the American Society of Mechanical Engineers at their forthcoming meeting in San Francisco, with a set of about 100 slides of the inventions of the mechanical engineers of California.

WE note with pleasure the warm reception accorded our good friend, Mr. Fred. Ives, of Philadelphia, in his visit to England. His work in projecting lantern slides on the screen in natural colors is attracting a great deal of favorable notice, and when his exhibition is noticed as it has been by the *London Daily Graphic, News* and *Telegraph*, it is an indication of the importance attached to his discoveries by these well known and influential sheets.

AT the recent exhibit by the Department of Architecture of the Brooklyn Institute, Mr. Frank Parshley, of Brooklyn, made a most creditable showing of large photographs of buildings. That photographic work of this nature is not easy, all who have tried it know, and Mr. Parshley has made for himself an enviable reputation among his fellow-workers for the quality of his productions.

ONE of the largest and finest pieces of photographic work yet produced is said to be the view of the fine Del Monte Hotel at Monterey, made for the Southern Pacific Railway Company by the W. H. Jackson Photo Company of Denver, Colo. It measures almost 70 inches in length.

WE have had the pleasure of seeing the work of Mr. W. B. Davidson, of Narragansett Pier, including some beautiful specimens of photographic work in sizes from 18 x 22 down, and also a fine assortment of transparencies. We are always glad to view work of such a clean artistic character as this, and congratulate him on his success.

MR. FRANCIS KNEBEL, of Austria, in speaking of some recent experiments with paramidophenol, remarks that some samples by a certain maker became, after a short time, of a brownish color, which on use in development turned the plate quite yellow; other samples of hydrochlorate of paramidophenol in dazzling white crystals, made up according to the formula of Lumière, remained perfectly clear and white. Plates developed with this became cloudy and no image resulted from development in it. Metabisulphite was substituted for the sulphite of soda, but with no change. Then 10 to 15 drops of bromide of potassium was added, and the surprising result was a positive instead of a negative. This experiment being repeated several times the result was always the same, and a few grams of hydroquinone added tends to make the tones more perfect and produce a more finished picture. A formula which has worked well with Mr. Knebel is—

| | |
|--|------------|
| Sodium sulphite..... | 80 grams. |
| Soda (crystallized) or potass. carb..... | 60 “ |
| Paramidophenol hydrochlorate | 4 “ |
| Hydroquinone..... | 3 “ |
| Water..... | 1,200 c.c. |

The formula, after use, may turn to a yellowish color, but, on filtering and being allowed to stand till next day, is again clear and ready for use.

EXPERIMENTS lately made with photography in enlarging on color sensitive plates specimens of handwriting, have clearly proven the great advantage possessed by photography over any agent yet known in the detection of erasures, forgeries and alterations in manuscript.

IN response to a request from Princess Isabella of Bavaria to Pope Leo XIII for his autograph for an album to be sold for some charitable occasion, His Holiness responded with some original and very flattering verses in honor of photography as an art.

WE regret our inability to have been present at the meeting of the Hiawatha Camera Club of Minneapolis on the 19th, at the Exhibition of the club, to which we were kindly invited. We have no doubt that we missed a treat, but the distance and other engagements rendered it impossible.

THE New Orleans Camera Club enjoyed a delightful trip down the river on the 8th inst., by invitation of one of its members, Major J. B. Quinn, U. S. A. The trip extended about 36 miles down stream and back, and included several stops. The occasion was one of great pleasure to all.

A VERY pleasant and instructive evening was spent by the Portland Camera Club on the 9th inst., when the first series of slides in their set were shown, embracing English, Venetian and typical country seats. Another in the course, given a few days after, on "Illustrated Boston," was also much enjoyed.

THE following process for obtaining red tones is recommended by M. Lettelier: 72 grams nitrate of uranium is mixed in a small quantity of water, and 20 grams nitrate of copper added, neutralizing the solution with carbonate of soda. Enough water is then added to make it up to a litre. Paper is then floated on it for a minute or two which has been sized with either gelatine or arrowroot, and after floating is dried in a darkroom.

After printing till the image is fairly visible, it is developed in an 8 per cent. solution of ferrocyanide of potassium and well washed in water. Sepia tones are obtainable by neutralizing with ammonia and developing with a solution of 2 per cent. instead of 8 of ferrocyanide.

THE trip proposed by the Lynn Camera Club for the 17th inst. was one of much historic interest, and one of which we should hear more, and we wait with interest some report of it.

CAPTAIN PIZZIGHELLI gives the following formula for toning prints after fixing, which, he says, is very energetic, gives blue-black tones and may be used at any time after being prepared :

| | | |
|----------------------------------|-----|--------|
| Sulpho cyanide of ammonium | 30 | grams. |
| Chloride of gold | 0.3 | " |
| Potassium hydroxide | 0.3 | " |
| Water | 100 | cc. |

It is proposed to organize an amateur photographic society in Worcester, Mass. There is much interest manifested in photography and considerable enthusiasm in regard to forming a society.

WE have to express regrets at our enforced absence from the recent exhibitions of the Society of Amateur Photographers of New York. We should have been glad to be present at the conference slide interchange on the 13th, and Rev. Dr. Bolles' lecture on "English Waysides and Cathedral Towns" on the 20th; we were, however, unable to attend.

THE Capital Camera Club of Washington have elected the following officers for the ensuing year: President, Chas. E. Fairman; Vice-President, Rev. E. Drewitz; Secretary, Charles A. Cooper; and Treasurer, C. L. Dubois.

AT the recent exhibition by the Pittsburg Camera Club, Mr. C. C. Craft was awarded the gold medal for the picture showing the most artistic merit, and Mr. A. R. Neeb the gold medal for the best transparency. The exhibition of work was most creditable, and the entertainment was made more enjoyable by a lantern slide exhibit under the direction of Mr. W. S. Bell.

THE Lancaster (Pa.) City and County Association of Photographers have elected the following officers for the coming year: President, Wm. L. Gill; Vice-President, J. E. Rote; Secretary and Treasurer, H. A. Black.

LETTER FROM FRANCE.

By LÉON VIDAL, Editor *Le Moniteur de la Photographie*.

Smokeless Flash Light Apparatus.—Rodinal.—Exhibition of English Art at Brussels.—A Paper, from the Committee in charge of the Chart of the Heavens, on Orthochromatic Plates.—Something about the Heliochromoscope.—About Iron Salt Papers in Imitation Platinum.—Annual Exhibition of the French Physical Society.—Congress of the Photographic Societies from the Provinces.—A Note Regarding the Sensitive Manganese Salts.—The French Committee for the Chicago World's Fair.

AT the last meeting of the French Photographic Society, two smokeless apparatuses were shown adapted to prevent the expansion of the magnesium when taking magnesium flash lights at night. Both apparatuses, although constructed by different firms, have a great similarity between them. They consist of a box of some convenient capacity, the front sides of which are closed by glass. This box stands upon a somewhat tall tripod, and it is connected both from above and from below with a large bag where the magnesium oxide is deposited. After the flash has taken place, the bag has to be emptied outside and the glass cleaned before recommencing. Evidently, this method is preferable to filling a room full of smoke, though, we hope, a more perfect and practical way will be found for accomplishing the desired result.

Rodinal, which is but the chlorhydrate-paramidophenol developer, introduced in France by Messrs. Lumière fils, has just been placed on sale at one of the Berlin Aniline Manufacturing Co.'s agencies. This developer is excellent; it yields particularly very soft negatives, but it has the drawback of being a very

powerful reducing agent. We believe amateur photographers will get better results with this developer than with any other.

The Belgian Photographic Society has just organized at Brussels a very interesting exhibition of English art. The catalogue issued contains a very limited, but thoroughly select number of exhibitors. The object of this exhibition is not only to show the beautiful and artistic works of photography produced in England, but also to give a good proof that though photography in itself may not be an art, yet its best products should be considered as veritable works of art. We should lose sight of the photographic process, we must not inquire how the work is produced, all we must look at is whether the picture is a work of taste, susceptible of arousing our emotion and worthy to be compared with such and such work of art, already famous for its artistic merit, and we don't see why the qualification of artistic should be refused to it, merely because the process employed has been borrowed from photography, and not done by the brush or the crayon. Evidently, there is plenty of ground whereon to wage war to the knife against a prejudice yet too deep rooted which influences our legislation. Nobody is yet disposed to admit that works of art are possible with photography, and that is why it would be now difficult to assimilate its productions with those of the painter, the sculptor, the engraver, etc.

Here is, then, the serious error of the day, and such is the general make-up of all these graphic processes that we are often at a loss to know when photography ends and art begins.

We fully recognize it in many cases when photographic work is purely an industrial art; and it is for this very reason that we find it so hard to place the work done by photography above that of the brass workers' and moulders' trades.

There is a difference, nevertheless, inasmuch that the brass of the industrial arts is never anything more than the reproduction of some original, while, by the aid of photography, one contrives to make original work by copying composite models arranged and lighted by the artist himself. The matter is in substance rather complex, although it looks simple at first, and such exhibitions as the one now in progress at Brussels are just the means that will lead us toward a satisfactory solution of the question, by allowing people a fair opportunity to judge of the artistic merits of good photographic productions.

The permanent committee on the chart of the heavens has decided to exclude the use of orthochromatic plates as not adapted to stellar photography. The reason given is this: "In examining stellar photos obtained on orthochromatic plates, it has been discovered that the stellar disks were surrounded by a strong aureola, due to the chromatic aberration of the red rays of the photographic objective."

We do not quite understand the meaning of this, but we think that this subject, thus saddled by an allegation truly hypothetical, should be worthy of being more closely examined.

The orthochromatic plates sensitized to yellow, for instance, are not at all sensitive to red, much less so than the ordinary plates. Why should they then be altered by the chromatic aberration of the red rays?

Orthochromatic plates have not been properly understood or defined, nor has the nature of their sensitiveness been determined on those plates experimented upon.

In my opinion, the use of these plates becomes imperative and far from being an obstacle to the result looked for; it cannot but contribute to render the same more exact and more complete.

We read in the papers that Mr. Ives has just constructed a heliochromoscope which permits the simultaneous observation in natural colors of the resultant of three diapositives. We congratulate this learned investigator on his fine work, but we consider it a duty at the same time to remind him that a description of the principle of apparatus of this kind appears in a paper published, in 1869, by C. Cros.

We presume that the heliochromoscope is constructed on some analogous principle. We do not by any means try to belittle Mr. Ives' merit, but only to remind your readers that the possibility of accomplishing the synthesis of the colors in a different way than by means of projections against the screen was suggested a long time ago, pointing out in a precise manner how to get at it. This beautiful application thus placed within the reach of all, without any complication of lanterns, will naturally help to render the services expected from it, and to make us patiently wait for a definite solution, perhaps far off yet, of the problem of the direct reproduction of the colors.

I will allow to Mr. Ives the full share that belongs to him on this point, but I should like him to admit of his own free will that in his investigations he has had predecessors who, as a matter of justice, should be accorded recognition.

Mons. Boivin has just commenced in Paris the manufacture of a ferrous paper called "imitation platinum." The image, after it is printed, is developed by exposing it to the vapors of boiling water. The cost is not high, and it now remains to be seen whether it will have any uses and advantages in practice.

The French Physical Society gives each year at Easter a special exhibition, where scientific men and inventors are allowed an opportunity to publicly exhibit and explain the instruments they have invented.

Photography is there this year represented by several exhibitors, viz.: photographic spectrum apparatus of Mons. Yvon; oxyetheric light apparatus; Mr. Pellin's special lantern for time exposures; Mr. Blondel's photographic registers of the periodical curves of alternating currents; Richard Frères' galvanometer with photographic register; Léon Vidal's polychromic lantern slides; Lumière's spectrum photography; Raymond's photomicroscopy, etc.

We will duly send you an account of the most important of all these.

Next May, a Congress will take place in Paris of the photographic societies from the provinces, in view of the prospective International Association of Photographers, the basis of which was already laid down last year at the Brussels Photographic Congress.

For this occasion the French Society of Photography will organize lectures, experimental exhibitions, etc. It remains to be seen whether the provinces will send delegates enough; also, whether the plan pursued will gain numerous adherents.

The paper of Messrs. Lumière fils, relating to sensitive manganese salts, was presented to the Society of Photography; it is but a preliminary study of the subject. We will abstain from speaking of it till the process employed by Messrs. Lumière has been fully described. This will happen very soon.

A committee has just been organized in Paris to incite photographers to exhibit at Chicago.

It is already an assured fact that France is to be largely represented at Chicago, and we know that among photographers and instrument makers the watchword is to actively get ready for that magnificent coming exposition.

PARIS, APRIL, 1892.

GLASS POSITIVES.

BY ELLERSLIE WALLACE.

PHOTOGRAPHIC transparencies, or glass positives, as they are more commonly called, have always been justly esteemed for their beauty and technical perfection. But aside from this consideration, the glass positive is important as being the first step in the reproducing or duplicating of negatives. The glass positive thus is photographically interesting in more than one sense, and may be classified in two principal divisions: (1) lantern slides; (2) all other varieties.

Of course every one knows what a lantern slide is; but many persons are too apt to imagine that this is the only form of glass positive; they have probably never seen a stereoscopic transparency—one of the most beautiful efforts of our beautiful art; nor the thin, fully timed positive intended for duplicating purposes; nor the striking samples suited for hanging in windows or ornamenting glass doors. It is safe to say that fresh pleasures are in store for such persons.

The glass positive being really a print upon glass, it stands to reason that the negative will have the same determining quality upon it for good or bad as it has in the case of the paper print. So, then, are we correct in saying that a given negative from which perfect paper prints are made will also yield perfect glass positives? In some cases the question can be answered affirmatively, but by no means always. Why is this?

In the first place, remembering our simple classification above, we should have to inquire whether the positives were to be the same size as the negative, and whether the former are to be used in the lantern only. The rate of enlargement or reduction of the positive has an important influence upon its photographic qualities, particularly that of density. It is a fact well known to intelligent operators, that the density or contrast in the positive increases almost *pari passu* with the rate of enlargement, just as in making enlarged prints on paper. So that a small negative which might not be too dense to give very fair lantern slides or small positives, would never do for making a large window transparency, say 15 x 20 inches in size. On the other hand, the negative with sufficient detail and thinness of the higher lights to afford perfect enlargements up to many times its own size, would be a very troublesome one to use for lantern slide making. The only thing to do in such a case as the latter would be to use a very slow plate for the positive, to give the shortest possible exposure, and have a developer containing plenty of restrainer, and mixed so as to give great density.

Not to go too much into detail in this connection, I may say that the best negatives are clear and not too dense, with perfect tone gradations, both in light and shadow. It goes without saying that they must be free from spots, streaks or defects.

Excellent results have been obtained by the so-called artistic improvement

of negatives. Much, however, can be done to a negative for paper printing that would not do for one intended for glass positives. For example, the practice of covering the back of the negative with tracing paper and working up portions with black lead applied with the artist's stump, is an excellent one, in so far as paper prints are concerned. But it would be difficult to make good lantern positives in the camera from a negative so treated, because even if the slide looked fairly well to the eye, the granularity of the tracing paper would show badly on the screen. Nevertheless, if the negative was the right size, good results might be obtained by contact printing in a very weak diffused daylight, such as that of an ordinary room partially darkened. In this case the texture of the paper on the back would not show, but it is unlikely that any attempt to use artificial light screened with ground glass, etc., for the printing, would be successful, as such a light partakes too much of the character of *direct light* like that of the sun, and would thus transmit the granularities of the paper through the negative image to the plate.

As a general rule, all retouching upon the face of the negative is admissible, if neatly done. In fact, no negative should be put into the slide-making camera without being closely examined, and any pinholes or small spots touched out, either with opaque water-color or the lead pencil. The latter will be particularly useful when a spot is seen on a mass of half tone. Paint of any kind would here be too opaque, but the pencil, if skillfully handled, can often be made to match exactly. The best method of giving the "bite" or "tooth" to the pencil is to apply a single drop of a mixture of two or three parts of turpentine to one of Canada balsam to the spot to be touched out, and after waiting a few seconds, to rub it off dry with a tuft of clean cotton.

It sometimes happens that small unsightly objects may be picked right out of the negative film by dexterous manipulation with a sharp pointed penknife. It is not so easy to do this now, however, as it was in the days of the collodion plate, with its comparatively soft film. Local reductions of over-density may be effected by neatly painting on the dry film some active chemical reducer, such as the iodo-cyanide of potassium. This is quickly prepared by throwing a lump of cyanide of potassium the size of a cherry into half an ounce of water and adding about the same bulk of pure iodine in crystals. The mixture should not be too much stirred, or at least not until the iodine is well taken up. This stock solution is one of the most active reducers of the developed image known, and requires considerable dilution with water before applying to the film for the above mentioned purpose.

So much, then, in regard to the negative. I need make no apology for dwelling upon the matter, for of course good glass positives can only come from good negatives.

The process to be chosen for making the positive will depend largely upon the question whether business considerations must come first or not. In the earlier days of gelatine dry plates great difficulties were encountered in making first-class lantern slides upon them. Even at the present time, with all the additional experience and knowledge we possess, I think it is fair to say that while the "transparency" brands of gelatine plate give admirable results for other work than lantern slides, the latter will be easier made by wet collodion, and with a much lower percentage of loss. To speak more plainly, I know it, for a fact, that for positives for reproducing negatives, or for simply hanging up in the

window, a slow gelatine plate, made for the purpose, is unsurpassable. But those photographers who have not had an active experience in lantern slide making, will be surprised at the delicate character of the work and at the advantages gained by using a process giving such clean-cut contrasts in the half tones as collodion. The first practical lesson that the slide-maker must learn is this: that while a positive may be beautiful to look at when held in the hand or mounted up before ground glass, it need not of necessity be successful when put into the lantern, and thrown, greatly magnified, upon the screen. The best lantern slides have a peculiar delicacy in the half-tones that sometimes only manifests itself when put into the lantern. Any over-development, any smudginess of the darker parts, which comes when development or toning is pushed in the hope of obtaining more brilliancy, and particularly solarization in the lights, to which gelatine plates are very subject, will ruin the positive for lantern use.

It is quite impossible to convey an exact idea in writing of the peculiar differences between a first-class slide and an ordinary positive. I hope, however, that what I have said may be of assistance to those who are novices in this most fascinating department of our art; and let me further profit by this occasion to earnestly advise all amateurs to get themselves into the habit of making their own slides. No pleasanter occupation for a winter's evening can be had than making lantern positives from the negatives that have accumulated during the spring and summer months, and there is also no better practical photographic tutor.

And now a few words about apparatus. When the positives are to be the same size as the negative, and made on dry plates by contact, nothing but an ordinary printing frame of the right size and with weak springs will be required. Some arrangement ought to be made in the darkroom by which the frame can be set upright on a shelf near to and on a level with a gas burner or lamp, which is turned on for a few seconds to make the exposure. Never change the distance between the frame and the illuminant, but make a distinct mark on the shelf and set the frame accurately to it at every fresh exposure. A piece of dead black paper should be laid over the back of the sensitive plate before setting in the back of the frame. When the negative and the plate are on very flat glass there may be difficulty in separating them after exposure. A neat way to do this is to apply a pneumatic holder to the sensitive plate, and when the negative rises with it, to carefully work the thumb nail of the left hand between the glasses, the other fingers of the same hand being free to support the negative.

For camera printing a very nice apparatus may be rigged up by arranging one of the long extension copying cameras on a long board, on which stands another camera facing the first one. The ground glass of the copying-box being removed, a couple of C springs are arranged in its place so as to hold the negative, which is always set with its film side inward, unless it be desired to make window transparencies, when just the opposite is done. As this kind of positive requires a ground glass backing and some adequate protection for the film, a moment's thought shows that the negative should always be thus set with its film side away from the other camera, so as to give a positive in correct position when its film is turned from the spectator and protected from injury by its own back. The space between the two cameras should always be darkened by some

connection between them, such as a couple of laths, over which a dark cloth is thrown. The apparatus must be set true, and the planes of the negative and of the sensitive plate must be parallel, no matter how great the distance between them. Any good lens may be employed. My favorite is the 11-inch rapid rectilinear of Dallmeyer, though this is a much larger instrument than is required for lantern slides. Both cameras should be firmly clamped down to the board after the proper distance between them is determined. Wagon-maker's screw clamps are very convenient for this purpose. The board, with the two cameras on it, is now to be directed toward a good even light. The plan I prefer is to hang a large sheet of white tissue paper in the full sun shining into a south window, and supporting one end of the board close to it on the window ledge, to support the other end by a couple of stout sticks. But other operators, preferring the more even light of the blue sky, seek a north exposure, and raise the board at an angle so as to clear the opposite building and obtain an unobstructed expanse of sky.

Care should be taken that there are no false reflections from the interior woodwork of the cameras. These sometimes prove so troublesome that it will be necessary to insert one or more large diaphragms of cardboard covered with black velvet. Such diaphragms have a wonderful effect in improving the purity of the image formed by the lens, and greatly conduce to brilliancy in the results.

A great deal can be accomplished by skillful shading down of such portions of the negative as are thin and print too rapidly in proportion to the rest. For instance, many landscape negatives have well detailed distances and skies, but the foreground being relatively much darker, will print through long before the distance has a chance to impress itself. But if the foreground portion be shielded with a blackened card for a part of the exposure, things are easily brought into harmony and good results obtained. This is equally applicable to contact and to camera printing.

I have already said that wet collodion is an excellent process for lantern slide making. I need not here consume space in giving formulæ for this well known method, but I may say that the collodion itself should be full bodied, rather old, and perfectly clear of sediment. The bath should contain a full proportion of acid, so as to give perfectly clear high-lights, even if the development is hard pushed. The developer itself may contain from 15 to 20 grains of sulphate of iron to the ounce, with plenty of acid, and, perhaps, a few drops of a restrainer made by treating 100 grains of gelatine with 10 of caustic potash in water for a few minutes. Heat should be used, and the solution afterward diluted to 9 ounces, adding an ounce of ordinary acetic acid, which redissolves the white precipitate thrown down by the alkali. I always prefer an iron developer which is somewhat aged like the collodion.

The tone of a collodion positive may be modified by the age of the collodion, and to some degree by the exposure. Full exposures and rapid development tend to confer warmth and redness. Very fine brilliant blacks may be obtained by applying bichloride of mercury to the fixed plate, followed (after thorough washing) by cyanide of silver. The latter is prepared by dissolving equal weights of nitrate of silver and of cyanide of potassium in separate portions of water and mixing. In lantern slide making, allowance must be made for the loss of density on these toned plates occasioned by applying the varnish.

I have had good results on slow gelatine plates developed with ferrous

oxalate. For positives which are to be used in reproducing, however, I prefer pyro, as giving all possible detail. In this work, the greatest care must be taken to secure detail, both in lights and shadows, and yet to keep the image quite thin, so that the resulting negatives may not have too much contrast. I should be much inclined, however, to work any given brand of transparency plate exactly by the maker's formula. If none were given, I should begin with a mixture of hydrokinone and eikonogen; or, for black tones, the new article, "rodinal," is excellent.

In concluding, I wish again to remind the readers of the BULLETIN that making glass positives is one of the best schools in practical photography. There is no department of the art showing more plainly how the photograph is the product of the joint action of light and of chemical agents, and how the one must be accurately suited to the other if good results are desired.

THE DEVELOPMENT OF PRINTING-OUT PAPERS.

By PROF. ALEX. LAINER, *Vienna*.

THE light-sensitive preparations of the modern printing-out papers in the market contain chloride of silver, besides free nitrate of silver or acetate of silver, tartrate or citrate of silver and free citric acid or tartaric acid; gelatine (aristotype paper), or collodion (collodion or pyroxiline papers), serve as picture-carriers.

The process with chloride of silver collodion, which is now very much in use under different names, was invented by Wharton Simpson in 1865, and since that time has been simply modified without any essential changes of the old formulæ being perceptible.

Good chloride of silver collodion formulæ contain mostly about 5-6 grams free nitrate of silver, from 10 grams nitrate of silver used, the rest being turned into chloride of silver by addition of chloride of strontium or chloride of lithium. Of the former, there are used for this purpose about 2.5 grams, of the latter about 1.2 to 1.3 grams. Among the different organic acids addition of $2\frac{1}{2}$ to 3 grams of citric acid proves to be the best. The collodion has to contain about 2 per cent. pyroxiline. The above quantity of silver is sufficient for about 400 to 500 c.c. of emulsion. An excellent and extensive notice about this was given by Mr. W. E. Woodbury in this journal.

Already, in 1866, several experimentalists made known formulæ about the development of chloride of silver prints of short exposure. 1 per cent. aqueous solution of gallic acid was applied, with addition of 0.3 grams citric acid or acetic acid; also pyrogallol acid solutions mixed with citric acid.

The aristotype papers, prepared with gelatine in connection with silver compounds, have only lately been placed on the market to any great extent, but the formulæ used for these can be traced back to some old long known printing processes. I mention here, for instance, the chloride of silver paper, after Hardwich. Hardwich lets the paper float for one minute upon the following mixture: 100 parts chloride ammonia, 58 parts citric acid, 66 parts bicarbonate of soda, 40 parts gelatine, and 10,000 parts of water. The silver bath for this consists of 20 grams of nitrate of silver, 300 c.c. of water, and 20 c.c. glacial acetic acid.

For comparison any emulsion formula for aristotype paper may serve; for instance, 130 c.c. of water, 8 grams of gelatine, 2 grams of citrate of potassium,

$\frac{1}{2}$ gram of chloride of ammonium, 7 grams of nitrate of silver, and some free citric or tartaric acid.

Hardwich applied to the above papers the following developer: 1 gram of gallic acid, 240 c.c. of water, 50 to 100 drops glacial acetic acid; some recommended also pyrogallic acid, as for instance:

| | |
|----------------------|------------|
| Pyrogallic acid..... | 5 grams. |
| Citric acid..... | 2 " |
| Water..... | 1,000 c.c. |

Mr. Bourgois placed before the Photo Club in Paris, in May of last year, a new special aristotype paper, which could be printed out or can be developed after an exposure of from five to ten minutes, with the following developer:

| | |
|-----------------------------|----------|
| Gallic acid..... | 7 grams. |
| Acetic acid..... | 7 " |
| Nitrate of lead (1.10)..... | 10 c.c. |
| Water..... | 1,000 " |

For negatives which are poor in contrast, only 500 c.c. of water instead of 1,000 are taken in this formula. The sepia brown developed pictures are, after washing, toned in the following gold bath:

SOLUTION A.

| | |
|--------------|-----------|
| Ammonia..... | 20 grams. |
| Water..... | 100 " |

SOLUTION B.

| | |
|-------------------------------------|----------|
| Chloride of gold and potassium..... | 1 gram. |
| Chloride of potassium..... | 1 " |
| Water..... | 400 c.c. |

B is added to *A* and is left standing for twenty-four hours. It is fixed in 1,000 water to 70 hypo.

Recently repeated experiments were made to submit collodion and aristotype paper, after short exposure, to development, and Mr. Valenta particularly has made some detailed tests during the past few months, and made known the results to the Photographic Society of Vienna.

The proofs presented awakened a good deal of interest, and although the following formulæ originating from Mr. Valenta were arranged for Austrian and German products, only slight modifications might be necessary to make them also suitable for other manufactures.

The developed pictures show according to circumstances different color tones, among which some excel by their brilliancy.

The following pyrogallic acid developer by Valenta has proved excellent.

| | |
|----------------------|------------|
| Sulphite soda..... | 100 grams. |
| Pyrogallic acid..... | 10 " |
| Citric acid..... | 11 " |
| Water..... | 1,000 c.c. |

This developer works quick and can be used repeatedly.

Experiments which I made with this developer on aristotype papers, prepared by myself, gave the result, that it works slow in the beginning, acting with more rapidity afterward, strengthening the picture, which easily may turn to fog. In a fixing bath with red prussiate of potassium, the white parts of the picture are fully restored again.

Slower (in about 15 minutes) develops the hydroquinone developer :

| A. | |
|--------------------|------------|
| Hydroquinone..... | 10 grams. |
| Alcohol..... | 100 " |
| B. | |
| Sulphite soda..... | 100 grams. |
| Citric acid..... | 5 " |
| Water..... | 500 " |

50 c.c. of solution A and 50 c.c. of solution B are given to 1,000 c.c. of water.

The developed papers are washed and toned in the following toning and fixing bath (after Lumière).

| | |
|---|------------|
| Hypo..... | 200 grams. |
| Ammonium sulphocyanide..... | 25 " |
| Alum..... | 30 " |
| Acetate of lead solution..... (10 per cent.). | 40 c.c. |
| Water..... | 500 c.c. |

The solution is heated in the water bath to 60 degrees, and then filtered.

100 c.c. of this solution are mixed with 50 c.c. of water and 1,000 of a 1 per cent. solution of chloride of gold and potassium.

Diapositives and opal pictures upon plates with printing-out emulsion are, according to Valenta, developed as follows:

Mix:

| | I. | II. | III. |
|--------------------|--------------|--------------|--------------|
| Water..... | 1,000 parts. | 1,000 parts. | 1,000 parts. |
| Hydroquinone..... | 15 " | 15 " | 15 " |
| Sulphite soda..... | 50 " | 50 " | 50 " |
| Citric acid..... | 3 " | ..... | ..... |
| Acetic acid..... | ..... | 5 parts. | ..... |
| Tartaric acid..... | ..... | ..... | 5 parts. |

After five to fifteen minutes' exposure in diffused daylight the development follows. Fixing and toning as above.

If the plate is first fixed in a neutral 12 per cent. fixing bath, and is then toned in the above toning and fixing bath, red tones are obtained, which can be used for diapositive pictures.

The following toning and fixing bath gives sepia brown tones :

| | |
|---|--------------|
| Hypo..... | 100 grams. |
| Acetate of ammonia..... | 100 " |
| Chloride of gold and potassium (1:100)..... | 30 c.c. |
| Water..... | 1,000 grams. |

Red tones are also obtained if the plates, fixed first in a neutral fixing bath, are put into the following mixture :

| | |
|---|------------|
| a. Ammonium sulphocyanide..... | 20 grams. |
| Hypo..... | 1.5 grams. |
| Tungstate of soda..... | 0.5 " |
| Water..... | 500 c.c. |
| b. Chloride of gold solution (1:100)..... | 60 c.c. |
| Water..... | 500 c.c. |

a and b are mixed in equal parts shortly before use.

Ruby colored tones are produced by developing formulæ II and III, if the developed plates are first well washed and then brought into a weak solution of fixing soda, which is mixed with ammonia, or if the plates are fixed in a mixture of ammonia and carbonate of ammonia (10 per cent.), and then washed and dried.

Dark violet to black pictures are given by the pyro developer if toned afterward in the toning and fixing bath.

| | |
|-----------------------|------------|
| Pyro..... | 20 grams. |
| Citric acid..... | 16 " |
| Sulphite of soda..... | 50 " |
| Water..... | 1,000 c.c. |

An advantage of these developed printing-out emulsions is in their delicacy; even at a six hundred times enlargement no grain is discernible.

[From *Photographisches Correspondenz*.]

ABOUT LICHTDRUCK.

BY ADOLF BEYERSDORFF.

(Continued from page 273.)

THE uniform coating of the plate with chrome gelatine is not such an easy manipulation. I will, therefore, have to describe it more in detail. The slightest dust, small bubbles or a little sand are sufficient cause to render such a plate useless, and it is best not to take any trouble with such failures, time and material being in such cases generally ineffectually wasted.

The lichtdruck even should be cleaned with a moist cloth and leveled. The prepared plates are put into the stove and heated to about 30 degrees R. The plates should be coated with a certain quantity of the chrome gelatine solution. The coating should be neither too thin nor too thick. The correct quantity is best found if the length and width of the plate are measured in inches, then multiplied, and the fourth part of the result taken. The number so found gives the weight in grams for the correct quantity of the solution. The necessary quantity is now weighed and flowed upon the middle of the heated plate (which before has been freed from any adhering dust). The proceeding after this is the same as with the first preparation, by evenly spreading the liquid with the finger of the right hand toward the edge, giving the plate a somewhat inclined position.

This very important manipulation should be done quietly and carefully. If the room is not too cold there is no need of hurrying with the work, the film not coagulating so quickly upon the plate heated to 30 degrees. After the first attempt of coating a plate there will be no great difficulty afterward. Finally, dust, fibres or bubbles should be removed with a pointed soft wooden stick. The plate is now returned to its previous place in the drying oven, a fresh plate is taken, and the preparation continues as above mentioned. When all is ready the drying oven is carefully closed, and even repeated passing by is avoided, because vibrations of the dried but still moist film might easily result in unevenness. The thermometer is now inspected. If it has risen to 45 degrees, the flames are turned down, and the heat in the closed drying-room will then remain at even temperature. After one to one and a half hours the plates are

dry. By yellow glasses fixed on the sides of the oven the progress of the drying can easily be observed. If the preparation is finished, the flame is put out and the plates are left to cool off. If these are needed quickly, they are placed upon the cross sticks in the interior of a box. After a few hours they have cooled off, and they can be used for printing.

In almost every establishment there is a tendency to introduce certain sizes. In this way there are not so many different masks required. It is also very much recommended to cover the relief plate around the printing surface. This enables a cleaner rolling on of the ink and prevents the soiling of the frame by much unnecessary color.

The prepared negative is placed in a sufficiently deep printing frame, with the picture side toward the outside, carefully cleaned, and well dusted off. The above mentioned plate for the production of the print surface is now laid upon the negative without sliding, with the light sensitive side face down. The cover is then placed upon this with the hinges removed. The tension rails, from which the springs were turned off, are now closed, and under the same are put four slanting wedges, which, one after another, are gradually pressed tighter between cover and tension rail. Since I have been engaged in *lichtdruck* I have worked always with the photometer when instructing a scholar. For myself, I have observed the progress of printing by looking at the plate, recognizing by proper judgment of the negative plate the moment when the half and middle tones were distinctly visible in the print. In this way, one will know pretty soon the proper time when to protect the depths from over printing by partly covering the same. By observation with the photometer, one relief plate may be printed very exact, the harmony between half-tones and shadows is easily found; but it is different with several plates, because different negatives require an unequal time of exposure. Each original requires a negative, which has to reproduce the character of the same with regard to strength and covering power.

The observation about the progress of the printing takes place without any disadvantage in the following way: A table is placed where the light is not too bright; upon this is laid a sheet of white cardboard and the printing frame, the operator being in front with the face toward the light. The two wedges of the upper tension rail are now carefully loosened; the cover is removed; the black carton is lifted; the blade of a knife is inserted carefully between printing plate and negative, and in the slit thus made a piece of thin white cardboard (with rounded corners) is put. Thus sufficient space is obtained to see and judge if the high lights are satisfactory and all middle and half-tones have sufficient strength, which can easily be recognized, the brown picture being visible upon a white ground. The proceeding is the same with the second side. It is better to examine rather too early than too late, to equalize the want of harmony of the negative by timely covering of the light in the shadows of the printing plate. If this weak exposure from the back of the plate is injurious in printing, then the film was too thin. When sufficiently printed, the plate is taken out of the frame in very subdued light, and one can easily determine if all half shadows and middle tones are distinctly visible, but not too deep brown. The high lights should be only faintly covered. Such a correctly copied plate may be considered already as a good printing plate, if no particular circumstances take place, but unfortunately there is no rule without an exception. The plate is now bathed in cold water until the same has penetrated everywhere. It is then put in the draining

apparatus, which at the present day finds the same application as in the dry plate process. The difference in temperature forms a very important part during copying in all chromate printing processes. In the particularly severe winter of 1879-80 I fitted up in Munich a lichtdruck establishment with a schnellpresse. The press was already in operation, before things generally were in order. Twenty-five thousand prints, in albums containing twenty-five each, were to be ready for the holidays. The original drawings around the border were very delicately executed in india ink; in the center a large white ground with a poem in the middle in old German letters; a problem, placing every lichtdruck operator in despair, even under more favorable circumstances, particularly by application of a "schnellpresse." On the 15th of November we had 16 degrees R., and it was not possible to finish a printing plate in the cold locality. On plates which were exposed the whole day, I did not obtain the faintest impression of a picture. As soon as the rooms had their proper temperature I could proceed. I have mentioned this episode only to call attention to the fact that proper temperature is one of the prime conditions. I have found also that in a newly built house which was not thoroughly dried out yet, and where the presses were in the basement, the finest printing plates were over-moistened, before a single print that could be used had been made. It has happened also that the whole printing film adhered to the paper. It looked as if no intermediate supporting film had existed, and still the lower film could be distinctly recognized after careful examination. This evil was easily removed by heating and opening the windows.

(To be continued.)

THE USE OF THE WATKINS EXPOSURE METER.

BY EDWIN J. PRINDLE, M. E.

I FIND that there are many who hesitate to use the Watkins meter, because of the apparently complicated system of scales by means of which the length of exposure is calculated. On a little closer acquaintance this difficulty entirely disappears, and one is surprised and delighted at the ease and celerity with which the calculations are made.

The system recognizes four factors as determining the length of exposure to be given with the use of a lens. These factors are designated on pointers on the scales, by the letters *A*, which is the actinic force of the light as it falls on the subject; *P*, which is the sensitiveness of the plate; *S*, which is the absolute color of the subject, and *D*, which is the ratio of the diameter of the aperture in the stop to the equivalent focus of the lens. The value of *A* is determined by placing the meter in the darkest part of the subject to be photographed in which detail is required, and, having turned the ribbon end of the instrument toward the source of light, counting the number of seconds required for the sensitive ribbon to darken to the standard tint, which tint is indicated by the bit of colored paper beside the ribbon. It is to be noted that the light which falls upon the ribbon should be that which illuminates the subject, and not the light which is reflected by the subject. *P* is a value determined by experiment for each brand of plates by trial. This is done by getting the correct length of exposure by experiment under conditions where *A*, *S*, *D* and *E* are known; then, having set the pointers last named to their correct value, the pointer *P* will indicate the value of *P* for the brand of plates used. The *P* numbers for the leading plates are given in

tables which come with the instrument. S is the absolute color of the subject, and is the same in all lights—the same in-doors as in the sunlight. 100 is the average value of S , such as portraits, open landscapes and general architecture.

The scales consist of a cylindrical barrel having two rings fixed upon its periphery, and between these rings and depending upon them to prevent side-wise movement, are four other rings which can be turned on the barrel. Five of the rings (the first four and last one) are divided in logarithmic proportion, so that a unit of length represents a unit of the logarithm, and the entire circumference is equal to the logarithm of 1,000. At the proper points the numbers of which the distances from 1 are their logarithms, are stamped on the rings so that the numbers on a ring run from 1 to 1,000. All the rings are not graduated up to 1,000, as values so high are not used on some of them. On ring 2, the pointer A is fixed, projecting over fixed ring 1. Pointers P , S and D are fixed on rings 3, 4 and 5, respectively, each projecting over the next ring to the left. Ring 5 also carries pointer E , which extends over ring 6. The scale on ring 2 runs in the opposite direction from the scales on the other rings. Each pointer is fixed on its ring at the position of the log of 1, except A , which is placed at 100 on ring 3. Here we have a calculating machine by which we can multiply and divide by our factors according to the well known law of logarithms, that the product of several factors is equal to the sum of their logarithms, and the quotient of two numbers is equal to the difference of their logarithms. By commencing with A , and moving it, and with it all the pointers to the right of it, to the value of A , on ring 1; then moving P , and with it S , D and E , until P indicates its value on ring 2, doing the same with S , still carrying along D and E , and finally, setting D to its value on ring 4, E will point to a number on ring 6, which is the product of $A \frac{100}{P}$, S and D . Since pointer A is fixed on ring 2 at 100, the pointer P in being set at its value is moved through a distance equal to the logarithm of 100 minus the logarithm of P , or $\frac{100}{P}$.

The product of these factors is evidently proportional to the length of exposure, and it is found, that for the ribbon used and the values given to the other factors, E is equal to $\frac{28}{1000}$ times this product. So the first scale is turned forward on the barrel, until 1 is opposite 27 on the last scale before these two rings are fastened to the barrel, and when all the pointers are at 1, E is at 28. Thus the product is always multiplied by 28. Until E has passed 1 on the 6th ring, the values are in thousands of a second or of a minute, if A is counted in minutes. After E has passed 1, the values indicated are whole units of the kind in which A is given.

The operation may be represented by the following equation :

$$Ax \frac{100}{P} \times S \times D \times \frac{28}{1000} = E.$$

The only factor which is left to the judgment of the user is the value of S , and considerable latitude can be allowed in the estimation of this, without materially affecting the quality of the negative.

Having given a correct exposure, the development in all ordinary cases becomes mere mechanical work.

The accuracy of the instrument is wonderful, and one soon learns to depend on it entirely in preference to his own judgment.

SHUTTER SPEED.

To the Editors of Anthony's BULLETIN:

THE other day, while in the office of your publishers, I was shown a letter of inquiry which read as follows, as nearly as I can remember the text: "Do you have a shutter that you guarantee to make exposure quick enough for running horses, express trains and moving objects for sale? Do you send them on trial, if not satisfactory to be returned?" Now, I must confess the queries are startling; and my only wonder is how you manage to reply to the many similar letters I was told that your house constantly receive. To indite a proper answer must often be a puzzle, and I should not wonder in the least if a sly bit of sarcasm, neatly hidden, lurked in many of your replies. I have thought I should like to answer some of them for you, and suggest a trial. As a sample of how I would do it, I submit the following as the mode of reply to the letter shown me: "My Dear Sir,—We are in receipt of your esteemed favor, and hasten to inform you that our shelves are replete with numbers of shutters that are exactly what you seek. We will guarantee them to be quick enough for any horse, be he a runner, trotter, pacer, looper, galloper or Arabian courser with high pedigree. If such horse cannot be suited with a shutter from our stock, there is no use in his trying elsewhere. Referring to the speed of the shutter, it will depend largely on the animal. If he is in good training and ready for a race, the shutter will go much more dexterously than if no preparation has been made.

"If you should want to photograph a horse while he is running his best, I do not know just how fast a good horse can go, why, get another horse that can travel in the same time, and run parallel with the one you wish to take; and when in proper position, let her go.

"As for express trains, you can take them at their highest speed, but this varies, so you must calculate for each exposure. Do not reckon by the time table, as that gives no idea whatever; but go by the train, and be sure and take the right one. I believe the average speed is about 360 miles an hour (or day). You can bribe the engineer to stop long enough for you to photograph the entire train; but if he is unwilling, do not 'hold up' for yourself. They object to such, and have a knotty opiate for those who do. (The opiate is extracted from hemp.) Sit on the track, and vow you will not move unless the train comes to a standstill. In fact, you can never be at a loss for a way to take the train. (Buy a ticket.)

"Referring to moving objects, why, I am one myself, at this season of the year. Almost everybody moves now. I should judge that the speed required of the shutter would depend largely upon the object. If you desired it to go very quick, tie it to the caudal appendage of a greyhound. If not so particular as to time, try a turtle."

Above gives one way, but I could also reply to said letter as follows:

"We doubt if any of our shutters would work slowly enough to photograph a train in motion and perform it satisfactorily, as, unless something in the result shows that the train was going fast, a sharp result would be exactly similar to one taken of said train when standing still with a strong wind blowing the smoke toward the rear of the train. We tried it once on the Unlimited Express, while running 360 miles, and the result showed everything as sharply defined as could be. Even the small screws in the panels of the cars were shown in perfection, and the conductor knocking down. The date on the coin

in his hand was clear evidence and showed plainly in the picture. Birds were taken so sharply that every feather was delineated as sharply as if drawn with a fine pen. You could see the insects in all their gyrations, and even a horse-fly. A race-horse making the last quarter in less than 10 seconds was so perfect that even his eyelashes could be counted, and at the instant of taking the picture he was winking at the bookmakers. With one of our double combination swing back contortion shutters, the Sound waves have been photographed. Not only those of Long Island Sound, but of the air. In photographing a fast train, the engineer's mouth was shown to be open, and some peculiar markings on the plate immediately around his open countenance. Professor what's-his-name, has interpreted them and finds he was saying, 'Let her toot,' meaning, of course, that the assistant was to blow the whistle.

"A pigeon was taken while flying swiftly through the air, and in the result were a large number of small round spots, but which were afterward discovered to be shot, fired from a sportman's gun at the bird. Flashes of lightning have been tried, but showed only half length, owing to the extreme speed of the shutter excelling that of the electric fluid. To include the entire flash, it would be necessary to put on the brakes. At the testing yard a 40-inch shell was photographed as it burst. Every particle of the shell is clearly and sharply defined, some of the unburned powder shown in the original octahedronical rhomboidic crystals, and others being converted in gas (not laughing), in every stage of the process.

"Even political office-seekers, running for the fat offices, have been taken on the fly, and the teeth of a circular saw clearly defined while revolving 7,000 times a second.

"We have a portrait style of shutter that is best adapted for children, as it takes them before they reach the gallery. For musicians, the 'Kazoo' is unquestionably the best," etc.

Now, my dear BULLETIN, do you not think I could fill the bill?

Facetiously yours,

H. S. NUTT.

PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

To the Members of the Photographers' Association of America and the Fraternity :

IN view of the fact that there is to be a Photographers' World's Fair Convention held in Chicago in 1893, I think it the proper time to commence work. Little did you expect when you elected me First Vice-President at Buffalo last summer that I would now be filling the office of President, or perhaps you would have reconsidered your votes, and little did I expect that such would be the case, or I would not have accepted the position under any circumstances. Through the resignation of Mr. Entrekin as President it devolves on me to fill that position until the next election of officers, which will be at our next Convention in 1893. The position I take with some reluctance on account of the circumstances mentioned. However, with the assistance of the members and officers, I shall do my utmost to make the Convention one to be remembered. Owing to the fact admitted by most every one that Chicago is the Convention City of America, and that we have secured the finest hall that we have ever held a meeting in, there is no reason why it should not be a grand success. We have

been liberal in prizes offered ; we have covered the field of photography so that every one can compete, having also arranged for judges, so that competitors will be responsible for their selection. Our display of photographs will, doubtless, be the finest ever made under one roof. The exhibit will be all on one floor under an excellent light. Our sessions will be short and to the point. All papers will be read only by title, and afterward published in the journals.

I hope the photographers will take an interest, and commence now to prepare their work for the "World's Fair Convention of '93." I wish to impress this on your minds, of making a display of photographs in the "World's Fair" city at that time, and competing for a medal. The attendance will be enormous, not only from this country, but from others. We have the assurance of a fine display of work from Europe, and every photographer should commence now to select negatives from which to make prints, and bring them to Chicago at this time. It is to your interest to attend these conventions and compare your work with others'. There is no one perfect. One can learn much by comparison. You can learn in a few minutes what it has taken others months to study out, and therefore improve in your work, which you have got to do to keep up with the fast strides the profession is making. It is an old saying that "there are none who have original ideas," and I believe it to be true to a certain extent. While you see a good deal of work in photography in which the position or lighting is characteristic of a certain operator, that person's ideas are based upon something he has seen, consequently not entirely original ; and that is why I say it is to your interest to get away from home and compare your work with others', and get some of the dust and moss off you. See? You can tell by visiting galleries, especially in the smaller towns, whether they have attended photographic conventions or been around much, by their work. There are some of them using old style card stock backgrounds and accessories that were discarded years ago by the more progressive ones.

The officers of this Association are at your service ; so don't be backward in asking or suggesting anything that will be of interest to the Photographers' Association of America.

FRANK A. PLACE.

BROOKLYN INSTITUTE.—PHOTOGRAPHIC DEPARTMENT.—EXHIBITION.

PHOTOGRAPHIC societies in general are now reaching a very high state of perfection, and their annual exhibitions have become quite notable events. A distinct progress has been made in the quality of work sent in to be hung, the fact that quality, not quantity, is the thing desired, becoming yearly more and more recognized. The photographic societies' rooms are not now, as once, simply places for a weekly discussion on some topic, but are a medium for daily exchange of thoughts and fancies, and are a means of bringing men into social contact and proving the old adage that several heads are better than one.

The Photographic Department of the Brooklyn Institute is noticeable for its rapid growth and re-establishment after a very trying period. Turned out of their original rooms by fire, with energy unequaled they have taken a floor at 201 Montague Street, and have as cosy and useful quarters as it is possible to find. Everything is arranged with a view to promoting social intercourse and constant attendance. Useful apparatus beyond the means of the ordinary amateur has been purchased, and, it is worthy of notice, this is kept in good

working order. The darkroom is fitted with every convenience, and, a point of importance, is thoroughly ventilated. Adjoining the darkroom is the bromide-room, fitted up for enlarging and for lantern slide work. The main room for meeting purposes contains backgrounds and accessories, a skylight and screens, and in it really good work has been done.

Thursday, May 12th, witnessed the opening of the exhibition of prints, and the rooms were thrown open for inspection. For twelve days the prints remained on view; and while many have profited largely in seeing their work alongside that of others, the department is to be congratulated on its very successful effort. Neat framing and artistic arrangement showed careful painstaking by the enthusiastic Secretary, Mr. G. W. Hart. Indeed, in this society enthusiasm and combination for the good of all afford a distinct contrast to others of our societies, where, it is to be regretted, self-interest and petty squabbling to a large extent predominate.

In the society's meeting-room the various stock houses showed new goods, and a general discussion was always going on. C. E. Hopkins exhibited several screens with Omega prints, and adjoining an aristo print relieved the eye. The Kamaret and the new 5 x 7 folding Hawkeye attracted considerable attention. A novelty was the Perfection trimmer—a neat arrangement for trimming prints of all sizes with the one pattern.

Near by on a table usually used for retouching a series of lantern slides were exhibited, those by Mr. Atkinson being very remarkable. These were toned with uranium nitrate and red prussiate of potash, some being finished in perchloride of iron, and were noticeable for their beautiful cleanliness and freedom from stain. Flower studies, by W. G. Peckham, were very fine.

The members' exhibition of prints was arranged in the rooms usually occupied by the Democratic Club. The catalogue was a very neat affair, and will be prized as a souvenir. Mr. L. P. Atkinson exhibited several bromide enlargements, one of Delaware Water Gap being toned with uranium. His views in Prospect Park were very fine, one being reproduced in the catalogue.

Twelve views at Lakewood, by G. M. Boardman, were excellent; one in particular, a picture of a plank road, flanked by trees and a rustic fence, attracting attention.

There were several lady exhibitors, and their work was quite up to the standard. A series of interiors, by Miss S. B. Skelding, showed very careful attention to details. A picture of the dining-room in the White House, by Miss Titcomb, was reproduced in the catalogue, and several miscellaneous pictures by the same lady were worthy of more than passing notice.

Platinotypes by G. W. Wundram attracted many, two studies at Freeport, L. I., being worthy of attention. Frame No. 91, by this gentleman, contained some excellent architectural studies. E. I. Rice had a well made up frame, showing how attractive a lot of small pictures may be made by care in presentment.

Miss A. L. Meeker's exhibit was among the first in general excellence, the vignette, "I Love You, Grandma," being one of the best amateur studies we have seen. "Clear the Track," by the same lady, a couple of youngsters on roller skates, showed plenty of life and action. This lady seems to have a knack of catching her subjects when they are off guard, and presenting them free from the awkward stiffness often noticeable in similar work.

Mr. W. C. Peckham showed an attempt at tele-photography, prints being exhibited from negatives taken first with an ordinary rapid rectilinear Dallmeyer lens, and others of the same subject using a modification of an opera glass. The results were certainly very creditable. A miscellaneous collection, by L. Lathrop, included several snaps of fireworks displays which were more than interesting. L. E. Meeker's "Raisin River" and "The Brook," two bromide enlargements, were very good, as were the platinotypes, "Scenes on Sissiboo River," by P. B. Vail.

A little picture by L. D. Marks was a real gem. The title was a quotation from Adam Bede, "She's one of them things as look the brightest on a rainy day, and loves you best when you're most in need on't." For graceful abandon this picture takes the palm, and one cannot fail to acknowledge the aptness of the quotation.

W. H. Woodcock's pictures come last in the catalogue, but his interiors are certainly the first in excellence. Using a Gundlach lens and carefully backing his plates, he has obtained some splendid negatives of the interior of St. Luke's Church, Brooklyn, showing the chancel and organ. No halation is visible. His exterior of the same building is a capital picture. A series of snap shots with a Kamaret are full of interest. Four 8 x 10 river-scapes at Trout Lake, Canada, are very good, while his picture of an oyster sloop laying with sails up, which is entitled "Beached," is especially fine.

Space prevents further mention of the capital work of G. W. Hart, of the artistic kallotypes of J. W. Morrow, and the magnificent portraits of J. H. Dingman, these latter being equal to the best professional work.

This is the department's second annual exhibition, and its great success will be incentive to energetic campaigning this summer.

WHITE ROSE PORTRAIT PANEL.

MARSHALL BROS., of Cazenovia, write us: "We are besieged with letters of inquiry regarding them. It is simply impossible to keep up with correspondence.

"For the interest of all, will you kindly insert the following notice in your next issue?

"To all friends and inquirers of the W. R. P. P., we desire to state that, owing to a perfect flood of letters and orders for this new style of portrait, it is impossible to answer all in a seemingly reasonable time. We therefore beg indulgence, assuring you, however, that every letter will receive an answer in due time.

"Many letters we receive have no enclosed stamp for reply. Postal cards we receive many. Up to date of this issue we will answer all letters and cards, stamps or not, but after date we cannot.

"Very sincerely yours,

"CHARLES P. MARSHALL,

MARSHALL BROS.

"Cazenovia, N. Y.

OUR ILLUSTRATION.

THE photogravure frontispiece of this issue of the BULLETIN is from a silver print of a negative made by Mr. R. Eickmeyer, Jr., of Yonkers, N. Y. We had the pleasure of selecting it from an uncommonly fine series of studies made by

this gentleman, and our only regret is that we cannot reproduce the whole series. We hope, at some future time, to give our readers another reproduction of this gentleman's unusually artistic work.

THE WORLD'S CONGRESS AUXILIARY OF THE WORLD'S COLUMBIAN EXPOSITION.

NOT THINGS, BUT MEN.

CHARLES C. BONNEY, *President.*
THOMAS B. BRYAN, *Vice-Pres't.*

LYMAN J. GAGE, *Treasurer.*
BENJAMIN BUTTERWORTH, *Sec'y.*

PRELIMINARY ADDRESS OF THE COMMITTEE OF THE WORLD'S CONGRESS AUXILIARY ON A CONGRESS OF PHOTOGRAPHERS.

THE World's Columbian Exposition of 1893 is intended to commemorate the progress of civilization, and be an incentive to further development, not only by displaying the best products of men's thoughts, as shown in material things, but also by bringing together for conference, in a series of Congresses, the leading thinkers, workers and artists of the world. The World's Congress Auxiliary has been organized with the approval and support of the Exposition authorities, and of the Congress of the United States, to have general charge of these Congresses. Audience rooms sufficient in number and capacity will be provided by the Directory of the Exposition.

Among the Congresses of the Columbian Exposition of 1893, that devoted to Photography should rank high, and be, as it undoubtedly will, a permanent benefit to the civilized nations of the earth. The advancement that has been made in photography, and the processes dependent upon it, within the last twenty years, has astonished the artists and scientists of the world. By its aid the astronomer has discovered countless stars and remodeled the map of the starry heavens. It is extensively used in almost every department of art, literature and science. Its future possibilities are too great for any one to estimate.

It is the design of the Committee to have men and women, who have become distinguished in the various departments of the Photographic Art and the processes dependent upon it, deliver papers before the Photographic Congresses which shall contain their best thought, and after well regulated discussions, shall become the property of the World's Congress Auxiliary, and if deemed worthy be published in the Encyclopedia of proceedings.

The following are suggested as some of the topics which may appropriately engage the attention of the Photographic Congress:

The History and Development of Photography.

The Present and Future Possibilities of Photography.

Emulsion Photography.

Photographic Chemistry.

Microscopic Photography.

Portrait Photography.

The Production of Photographs in Natural Colors.

Photographic Apparatus.

Landscape Photography.

Photographic Mechanical Processes.

The Best, Cheapest and most Rapid Photographic Process for Illustrating Books, Newspapers, etc.

The Latent Image and its Development.

Photo-Legal Photography.

Photo-Medical Photography.

Astronomical Photography.

Amateur Photography.
 Photographic Optics.
 Orthochromatic Photography.
 Carbon Printing.
 Silver Printing.
 Platinum Printing.
 Photography as an aid to Education.
 Photography by Artificial Light.
 Aerial Photography.
 Submarine Photography.
 Instantaneous Photography.

The Congress of Photographers will be held in Chicago some time during the month of August, 1893.

The committee in charge of the arrangements for the various meetings of the Photographic Congress must, of necessity, be composed of persons resident in or near Chicago, to enable them to attend the meetings of the committee. But to give the Auxiliary the benefit of the advice and counsel of persons skilled in the art-science of photography throughout the United States and the other countries of the world, and to make the Photographic Congress representative of the important interests and topics to be considered, Advisory Councils of the Photographic Congress have been, and will be, appointed from time to time.

These Advisory Councils will be composed of persons skilled in this department of art-science throughout the world.

It is desired that photographic societies and conventions, wherever held, shall send to this committee the names of such persons as they consider best fitted to represent them, either by the presentation of papers for the Congress, or by taking part in its discussions.

The committee also wishes to receive suggestions as to method of work, topics for discussion, and suitable persons to treat special subjects.

The Advisory and Honorary Members of the Congress are particularly requested to interest themselves in this direction, and to make such suggestions as they may deem proper. Photographic periodicals and individuals to whom this address is sent, are also invited to make such suggestions and recommendations at the earliest possible moment, to the end that they may be utilized by the committee in forming the final plans in pursuance of which such Photographic Congress will be held.

JAMES B. BRADWELL, Chairman.
 GAYTON A. DOUGLASS, Vice-Chairman.
 C. GENTILE,
 MAX PLATZ,
 M. J. STEFFENS,
 ALEX. HESLER,
 W. J. ROOT,
 BERNHARD EICHELMANN,
 Committee.

NOTE.—Inquiries and communications in relation to the proposed Photographic Congress should be addressed to

JAMES B. BRADWELL,
 Chairman of the Committee of the World's Congress
 Auxiliary on a Congress of Photographers.

CHICAGO, ILL., U. S. A.,
 April 19, 1892.

ADVISORY COUNCIL.

The members of the Advisory Councils of this Department thus far appointed are :
Arkansas—R. W. Dawson, Little Rock.
California—S. W. Burnham, San José.
Colorado—W. H. Jackson, Denver.

Connecticut—Chas. Stuart, Hartford.
Dist. Columbia—Prof. T. W. Smillie, Smithsonian Institute, Washington.
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FOREIGN.

England—Mr. Andrew Pringle, Kent; Mr. W. Jerome Harrison, Birmingham; Mr. H. P. Robinson, Tunbridge Wells; Capt. W. deW. Abney, Chapman Jones, J. Traill Taylor, T. C. Hepworth, London; Mr. Cembrano, W. Willis, Camera Club, London; Frank Sutcliffe, Yorkshire; Henry Sturmev, Bradford; W. T. Wilkinson, Leicester; Prof. Raphael Meldola, London; A. R. Dresser, W. Van Der Weyde, W. E. Debenham, W. Bedford, Camera Club, London.
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Japan—Mr. W. K. Burton, H. Mizno, Tokio; Sacaicho Itchome, Yokohama.
China—Bostwick, Tienstien.
Italy—Ruffo Antonio duca d'Artalia, Rome; Prof. Cav. Giorgio Roster, Florence.
South America—E. Spencer, Santiago, Chili; M. Chute, Buenos Ayres, Argentine Republic.
Hawaiian Islands—Chas. Weatherwax, Honolulu.

PROMPT ADVICE. — "What would you do if you were in my shoes, Jephson?" asked Hobbs.

"Black 'em," replied Jephson, eyeing Hobbs' understandings critically.

ANTHONY'S Photographic Bulletin.

EDITED BY

Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by **ARTHUR H. ELLIOTT, Ph.D., F.C.S.,**
and a corps of practical assistants.

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Advertisements should reach us not later than the Saturday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, six, twelve or twenty-four issues.

E. & H. T. ANTHONY & CO., Publishers.

AMERICAN INSTITUTE—PHOTOGRAPHIC SECTION.

THE attractive programme issued by the Secretary brought a large audience to the meeting of the above section on May 4th. Mr. Henry J. Newton occupied the chair. Professor Elmendorf was on the cards for an illustrated talk on "Here and There with the Camera." After a little speculation as to whether the worthy professor had met with some calamity, the gentleman himself walked in with a goodly package of slides, and the meeting was called to order.

The Secretary announced the receipt of copies of the *Eye* and *Times* and of several German journals, for all of which a vote of thanks was accorded. He also announced that at the June meeting, which would be the last of the session, Mr. A. D. Fisk would exhibit a series of slides, and from past experience he could assure all that a very pleasant evening would be spent.

In a discussion on rodinal which followed, Mr. Newton advocated the free airing of experience. Some people could use one thing; others failing with this, succeeded with another. This had always been a puzzling problem to him.

Professor Elmendorf believed in trying everything that came out. He had tried rodinal, but thought that of developers pyro was as good as any, with hydroquinone a close second.

Mr. Becker's experience with rodinal was that negatives developed with it were lacking in density. But when he used a mixture of hydroquinone and para-amidophenol he got, quickly, negatives with good detail and proper density.

Mr. A. L. Simpson had found lack of density with para-amidophenol, but had obtained good results by finishing development in once-used pyro.

After some remarks by Messrs. Partridge and Newton, the lantern was started and the slides projected on the screen.

Professor Elmendorf had brought along a mixed collection, or, as he put it, "there was a good deal of here, and some there, and some it would be difficult to say where." Some were on wet, others on dry, plates, and efforts to distinguish the one from the other resulted in ignominious failure. Pictures showing the methods of tuition employed at the Institute for Deaf Mutes were very interesting. Others of the Astor and Stewart galleries followed, and then two pictures, one of a fire engine on the way to a fire, and the other of the engine at work, this latter colored in Mr. Elmendorf's inimitable style, being very realistic. Pictures of Princeton College, made in 1877 and 1878, were very fine, and a series of slides showing various stages of a football match between that college and Yale were heartily applauded, especially one showing the ball sailing over the cross bar.

Views up the Hudson were very fine, and some showed the advantage of using the back combination of a rapid rectilinear lens when a lens of longer focus was required to get distant objects more distinctly.

Scenes on Cayuga Lake, showing the ferry-boat and the professor's own boat, were good, and the fish pictures made many a disciple of Isaak Walton envious. The majority of these pictures were colored and were very fine.

The Falls of Niagara, with Mr. Gubelman in attendance, made a fine slide. Several Canadian scenes followed, and then by a leap the Arc de Triomphe in Paris was presented. This was a remarkably fine slide, the detail in the shadows being well brought out. Views in Switzerland and Holland brought the lecture to a close.

Professor Elmendorf spoke of the trouble he had experienced with his slides. Minute

drops appeared on the cover glass, and he could not account for these. They were not due to hypoin either plate or the mat. A short discussion followed, and it was generally attributed to the soda in the glass attracting moisture from the atmosphere.

The meeting adjourned at 10 o'clock.

ST. LOUIS CAMERA CLUB.

THE annual meeting was held at the clubhouse on April 5, 1892, and was attended by most of the active members. Numerous roses, the gift of a member, adorned the room.

The reports of the President and Secretary showed that the club had made great progress during the year ending March 31, 1892. New and commodious quarters were secured and fully equipped with the necessary apparatus. The library is regularly supplied with the leading journals. Chemicals are supplied for the free use of the members for developing.

The darkroom adjoining the library is so arranged that no one, hastily entering, can ruin the work of any one already in the room. It contains four stalls, each fitted up with trays, graduates, fixing bath, sink, etc. Incandescent electric lamps, shielded by ruby, orange and ground glass, afford an abundance of safe light. The ruby and orange glass swings in a door and can be swung aside to give white light for printing by contact, etc. Each stall has a washing box and will accommodate two persons at once.

The gallery has a suitable skylight, and is fully equipped with backdrops, head rests, etc. There is an 8 x 10 portrait camera, and 8 x 10 copying and enlarging camera. These are new and are fully equipped with all the stands, etc., which are necessary. A good sized darkroom is also attached to the gallery for changing plates or developing. This gives the club two darkrooms at its service.

The club has a first-class pair of lanterns, fully equipped with gas cylinders, dissolving key, etc. During the year the jets for burning the mixed gases have been completely remodeled and are now inferior to none in the market. A convenient stand, with elevating screw, for raising or lowering the lanterns, has been purchased.

The hall in which lantern exhibitions are given is admirably suited for the purpose. It is lit by electricity, and the chandeliers are so arranged that they can be swung aside so as to secure an unimpeded view of the screen. The screw is so arranged that it can be put in place in five minutes and removed after the exhibition without marring the appearance of the room.

The annual field day will be held on Saturday, May 21, 1892, and much interest is being already manifested. A number of

prizes have already been secured and more are expected.

Notwithstanding all the expenses thus entailed on the club, no indebtedness has been incurred. The quarters now occupied by the club are inferior to none in the country. Its doors will be gladly opened to visiting members of other clubs. All of the rooms are heated by steam and lit with electricity. In addition the members have all the privileges of the Pastime Athletic Club, in whose beautiful building its quarters are situated. There is a well equipped gymnasium, handball court, bowling alley, billiard-room, reading-room, and splendid shower, swimming and tub baths.

In completing their year's administration, the outgoing officials certainly are to be congratulated on the success of their year's management. The newly elected officers will find it hard to render an equally good account of their stewardship.

Officers for 1891-92: President, William M. Butler, 2636 Osage street; Vice-President, John W. Dunn, 3418 Meramec street; Secretary and Treasurer, Charles M. Alexander, 221 Custom House; Assistant Secretary, Frank J. Hickman, 404 Market street; Executive Committee to consist of the President and Vice-President, *ex-officio*, and the Chairmen of the following committees: House Committee, Walter A. Boeck; Lantern Slide Committee, William Mulford, 311 Pine street; Membership Committee, Dave B. Aloe, 415 N. Broadway; Director in the American Lantern Slide Interchange, William Mulford, 311 Pine street.

ANNUAL FIELD DAY, MAY 28, 1892.

ARRANGEMENTS have been completed which will insure a pleasant excursion for the members and their families to Piasa Bluffs. A special car furnished by the railroads as a compliment to the club, will be attached to the Chicago and Alton train leaving the Union Depot at 8.30 A.M. On arrival at Alton a special engine will be furnished by the Bluff Line (St. L., A. & S. R. R.), and the party will leisurely follow the road up to Piasa Bluff, stopping on the way to photograph the picturesque scenery, so well known to all. Dinner will be served at the Hotel at Piasa Bluffs. After dinner and "picture taking" are over, the party will leisurely return to Alton. Here the car will be attached to the Chicago and Alton train, leaving Alton at 6.40 P.M., and arriving at the Union Depot an hour later.

The successful completion of the railroad arrangements is due to the untiring energy of Mr. H. A. Fisher, General Manager of the "Bluff Line," who is himself an amateur of merit.

PRIZES FOR THE FIELD DAY.

Rules and regulations for competition are being prepared by the committee and will be announced in due time.

A. S. Aloe & Co. offer for the best picture made on the Field Day, landscape, 1 group and 1 instantaneous picture, a 6½ x 8½ Rapid Daiscope Lens, with Iris Diaphragm, costing \$45.

For the best portrait, made at any time, a Blair Tripod, costing \$4.50.

For the best group of the members of the club, made on the Field Day, composition and number of figures to be considered, a 5 x 8 Blair Reversible Back Camera, costing \$35.

J. C. Somerville offers for the best landscape made on the Field Day a No. 2 Symmetrical Somerville Lens, or a No. 1 Somerville Wide Angle Lens, the winner to have his choice of the two. Both of these lenses are suitable for a $6\frac{1}{2} \times 8\frac{1}{2}$ plate.

H. A. Hyatt offers for the best portrait made on the Field Day, a 5 x 8 Mound City Landscape Lens.

M. A. Seed Dry Plate Company offer :

1. For the best genre picture (figure study) made on the Field Day, \$10 worth of dry plates.

2. For the best three instantaneous pictures made on the Field Day, \$10 worth of dry plates.

3. For the best positive on a film, from a Field Day negative, \$10 worth of dry plates.

4. For the best transparency, from a Field Day negative, tone and subject to be considered, \$10 worth of dry plates.

G. Cramer Dry Plate Works offer :

Class A.—Best lantern slides made from negatives taken on Field Day, 1892, each competitor to enter three slides.

Class B.—Best landscape on isochromatic plates, taken on Field Day, 1892.

Class C.—Best instantaneous picture taken on Field Day, 1892.

Class D.—Best group taken on Field Day, 1892.

Class E.—Best picture made since June 1st, 1891.

Class A.—1st prize, \$5 worth Cramer's transparency plates.

2d prize, \$3 worth Cramer's transparency plates.

3d prize, \$2 worth Cramer's transparency plates.

Class B.—1st prize, \$5 worth Cramer's isochromatic plates.

2d prize, \$3 worth Cramer's isochromatic plates.

Class C.—1st prize, \$5 worth Cramer's plates.

2d " \$3 " "

Class D.—1st " \$5 " "

2d " \$3 " "

Class E.—1st " \$5 " "

2d " \$3 " "

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. Correspondents will please remember this. No attention will be paid to anonymous communications.

Q.—A. J. S. writes: Please answer the following questions: Can I enlarge through flexible films the same as if they were glass negatives; can they be developed with pyro-

developer? Can "Pizzighelli" direct printing paper be used with light from a lantern the same as bromide paper? Can platinum paper be used for the same purpose? Are gelatine dry plates instantaneous, or do they take time?

A.—A flexible film negative can be enlarged the same as a glass one, if properly supported so that its surface is perfectly flat. This is sometimes accomplished by placing it between two thin and perfectly clear sheets of glass. It may be developed with any good developer. Pizzighelli direct printing paper is not sufficiently sensitive for use with a lantern in the manner you suggest and the same objection holds good with platinum paper. Gelatine dry plates are made for both time and instantaneous work.

Q.—J. S. A. writes: Do you know of a "Magic Lantern" or other such instrument capable of producing an image from an ordinary plate on a screen at a distance of 50 or 75 feet from the instrument, the image or picture to be 15 or 20 feet in diameter. What is the greatest possible diameter of image or picture at such relative distances, viz., 50 or 75 feet between instrument and screen? Can the electric light be used instead of the calcium successfully?

A.—Almost any really good lantern would fill your wants in this respect, but the illumination for this distance and size of projected image would need to be extremely powerful; the electric light would here be superior to the calcium. The diameter of the image would materially depend upon the size and focal length of the lens employed.

Q.—C. W. L. writes: Can you inform me through the BULLETIN if there is a book of instruction on photo-gravure and similar printing processes. Please give name and where obtainable; also materials for such work?

A.—An excellent work of this character is one by W. T. Wilkinson, entitled "Photo-engraving, Etching and Lithography." Work of this kind, however, is so largely a matter of technical skill and manipulation, that the only satisfactory way to become proficient at it is under the hand and guidance of a practical master. Our publishers can supply you with both book and materials needed if you wish them.

Q.—E. H. H. writes: Will you please answer the following in the columns of the BULLETIN: What is an easy method to prepare ferric oxalate for kallitype printing? I have a number of formulas expressed similar to the following: "A solution citric acid at

35 per cent. of water." Please explain. Is nitrate of uranium affected by keeping it in the light, or had it better be kept in dark?

A.—Dissolve 40 parts of anhydrous ferric sulphate in 400 parts of hot water; add 86 parts of pure crystallized sodium carbonate dissolved in 200 parts of hot water. Wash the precipitate thus formed with cold water until perfectly neutral to test paper. Dissolve the precipitate in a solution containing 40 parts of pure powdered oxalic acid in 187 parts of water. The solution thus formed contains 20 per cent. of ferric oxalate, and 6 per cent. of free oxalic acid, and is ready for use. We presume the formula you give calls for a 35 per cent. solution of citric acid in water, or water 65 parts, citric acid 35 parts. Nitrate of uranium should preferably be kept in the dark. In the presence of alcohol, ether or organic matter it is rapidly decomposed under the influence of sunlight.

Views Caught with the Drop Shutter.

Mr. FRAZIER, a well known Omaha artist, has recently purchased the photographic studio formerly owned by Mrs. BROWN, at 534 West Broadway, Council Bluffs, Iowa. It has been entirely remodeled under his management and many valuable pieces of apparatus added, making it one of the best appointed of the Western studios.

A NEW dry plate company has recently made its advent in Chicago under the title of the ILLINOIS DRY PLATE COMPANY. The incorporators are Lewis M. Heintz, Richard

L. Boyer and Charles W. Leibentritt, and it is capitalized at \$25,000.

Mr. PAUL BALGLEY has located a new studio at Glastonbury, Conn., where we wish him every possible success.

AMONG some photographs taken by Mr. C. A. PALMER of Matteawan, N. Y., are several worthy of special notice, both for their excellence and the historic associations connected with the originals. Among them was the first view ever taken of Washington's headquarters at Newburgh, and two photographs of the historic Beverly Robinson home at Garrisons, lately destroyed by fire. Several others of local interest showed remarkable depth and detail.

WE have been favored by Messrs. Williams, Brown and Earle with a pamphlet entitled "The Principles of a Photographic Lens Simply Explained." It is written in a popular and interesting manner, and our thanks are due to them for their kind attention.

Mr. REEVES, of Anderson, Indiana, has been victimized by a man who claims to be his agent, and has been selling tickets for \$1 each, which purport to entitle the holder to one dozen photographs at his (Mr. Reeves') studio. It seems as if the public should have long ere this taken the warning so often repeated against swindling canvassers of this description, and yet such cases as this continue to be of daily occurrence. Fortunately, the scoundrel was arrested before he had an opportunity to profit to any considerable extent by his nefarious dealings. Justice in these cases should be quick and sharp.

TABLE OF CONTENTS.

| | PAGE | | PAGE |
|---|------|--|------|
| ABOUT LICHTDRUCK (<i>continued</i>), by | | THE DEVELOPMENT OF PRINTING-OUT | |
| Adolf Beyersdorff..... | 305 | PAPERS, by Prof. Alex. Lainer | 302 |
| AMERICAN INSTITUTE—PHOTOGRAPHIC | | THE FIFTH ANNUAL JOINT EXHIBITION | 289 |
| SECTION..... | 317 | THE USE OF THE WATKINS EXPOSURE | |
| BROOKLYN INSTITUTE.—PHOTOGRAPHIC | | METER, by Edwin J. Prindle, M. E. | 307 |
| DEPARTMENT.—EXHIBITION | 311 | THE WORLD'S CONGRESS AUXILIARY | |
| EDITORIAL NOTES..... | 291 | OF THE WORLD'S COLUMBIAN EXPOSITION..... | 314 |
| GLASS POSITIVES, by Ellerslie Wallace. | 298 | VIEWS CAUGHT WITH THE DROP SHUT- | |
| LETTER FROM FRANCE, by Leon Vidal. | 295 | TER..... | 320 |
| OUR ILLUSTRATION..... | 313 | WHAT OUR FRIENDS WOULD LIKE TO | |
| PHOTOGRAPHERS' ASSOCIATION OF | | KNOW..... | 319 |
| AMERICA, by Frank A. Place..... | 310 | WHITE ROSE PORTRAIT PANEL, by | |
| SHUTTER SPEED, by H. S. Nutt..... | 309 | Charles P. Marshall..... | 313 |
| ST. LOUIS CAMERA CLUB | 318 | | |



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PRINTED ON N. P. A. EXTRA BRILLIANT PENSÉ ALBUMEN PAPER.

MONTANA SCENERY.

ANTHONY'S

Photographic Bulletin.

EDITORS :

PROF. CHARLES F. CHANDLER, PH.D., LL.D.

PROF. ARTHUR H. ELLIOTT, PH.D., F.C.S.

VOL. XXIII.

JUNE 11, 1892.

No. 11.

PHOTOGRAPHY AND MEDICAL SCIENCE.

WHILE recognizing the important and far-reaching strides that photography is making in every direction, it is surely a matter for regret that it has not been more universally adopted by the medical profession, particularly by surgeons, who every day are called upon to perform operations, the details of which, though emphasized by writing, give but an indefinite idea of the methods employed. Hand drawings under such circumstances are necessarily incomplete and certainly unreliable.

As a recording medium photography can certainly claim the palm for accuracy, speed and simplicity, and surely the results are worthy the effort of production. Medical text-books are now to a certain extent illustrated by half-tone reproductions from photographs, but only to a certain extent. The reason that hand drawings are introduced is obvious. Until more of our medical men make it part of their procedure to photograph interesting cases, so long will there be a paucity of material for the author to select from.

There are many surgeons who make it a practice, and a good practice it is, to communicate to the journals their observations and inferences. If, now, these articles were accompanied by readily made illustrations ready for use, surely a great deal would be accomplished.

A flash-light picture of the subject on a 4x5 plate furnishes the basis for such an illustration. From this an 8x10 bromide enlargement is made, and on this enlargement a pen and ink drawing or even a reproduction in colors may be made. A little bichloride of mercury removes the photographic part, leaving the drawing on the paper. This is ready for the photo-engraver and the producer has the satisfaction of bringing out the points of interest in a way satisfactory to himself, and highly so to the editor.

In the ward the camera should be indispensable, and notable cases would form an album of the greatest interest and value to the whole profession. It is,

indeed, a duty that medical men owe one to the other to spread information in every possible manner, and with such an application of photography, the diagnoses of intricate cases could be greatly simplified.

That much may be accomplished is shown by the successful photographing of the larynx, the vocal chords and the eye. There is surely no quicker method, no more reliable one, and none with more convenience to the patient than the rapid transference of a picture of the diseased part to the photographic plate and its subsequent careful examination.

As to the value of photomicrography, that surely will be admitted by all. There can be no other means of imparting information concerning insidious germs. Photomicrography is a delightful study, one replete with interest and profit. It is becoming daily more evident that every disease is caused by some particular germ. The only way of establishing the presence of this germ is by a microscopic examination, and the only means of its identification is by comparison with photomicrographic reproductions of germs taken from cases known to be so diseased.

For this class of photographic work, it is a common error to suppose that expensive apparatus is required. There can be no greater mistake than this. We recently had the pleasure of inspecting some of Dr. H. G. Piffard's apparatus for photomicrography, and its simplicity was really wonderful. It consisted of a plain, square portrait camera box with a box-like extension in front, into which he placed the barrel of his microscope in a horizontal position. For beginners even expensive microscope lenses are not necessary, and we have the testimony of Mr. Andrew Pringle, of England, who states that the work done with a student's microscope would "take a lot of beating" with any lens, however expensive. This, of course, applies to low powers suited to the subject.

Nevertheless, it must not be supposed that photo-micrography can be made to supersede microscopical investigation. In this connection, Mr. T. Charters White, speaking of his results, says: "However sharp they may be and however full of detail, they can never supply the means we possess by focusing, of following the relation of one plane of the subject under examination to another, which is the essence of microscopical observation." But he says further: "It was from a deeply rooted dislike to the diagrammatic character of the illustrations in all anatomical and physiological works, conveying to my mind, as they did, impressions which microscopical observation failed to recognize, that I determined to try what photography would do to supply something nearer the actual appearance."

For the work upon disease germs, bacteria, fine lenses are a necessity, but for a large number of histological subjects the lenses of a student's microscope of good make are all that could be desired, and the results are infinitely superior to any drawings made with a camera lucida or other means.

There is surely in photography a means for the better acquisition of information concerning disease, its causes and removal, and hence there must be a necessity for its larger employment by the men in whom we confide the treatment of our ailments.

All communications for the columns of the BULLETIN should reach us on Monday preceding the day of issue, to insure their publication at that time.

EDITORIAL NOTES.

THE first camera slide exhibition by the Camera Division of the Jersey City Athletic Club was given on the evening of the 26th of May, and was a great success. Over two hundred views, all the work of members of the club, were exhibited.

WILLIAM B. LLOYD, of Hartford, Conn., has nearly completed a large photographic cartoon of Washington Commandery Knights Templar of that city. The picture measures 10 feet by 6, and is on the same style as D. H. Anderson's celebrated group of the Seventh Regiment, Veteran Firemen, and others.

A VERY interesting exhibition of slides was given on the 22d ultimo by the Schuylkill Camera Club, of Pottsville, Pa.

THE Lowell Camera Club (Mass.) have completed arrangements for a permanent organization. Their list of officers will be announced later.

MR. E. H. CURTIS, of New London, O., writes that he has "been experimenting a little with flashlight," and sends a print of an interior, a very difficult subject, on which he asks our opinion; it is excellent, and our advice would be to keep right on experimenting. The subject is well handled in all its stages and the lighting is capital.

THE First Annual Exhibition of the Toronto Camera Club has just taken place, and has earned a good deal of enthusiasm, over 500 prints, contributed by about 25 different amateurs, were hung, and much enjoyed by the large number of visitors to the exhibition.

THE NEWARK CAMERA CLUB listened to a very interesting lecture on the 16th of May, from Mr. Starks W. Lewis, of Brooklyn, on the artistic field presented by the Berkshire Hills. The lecture was illustrated by a number of views.

THE action of the Committee of the Ways and Means of the Columbian Fair in excluding all photographers but the few firms who may buy a license at a high price to make negatives within the exhibition grounds, still rankles in the minds of all photographers, both professional and amateur—and it is quite likely that a movement will soon be put on foot to present a monstrous petition asking that any and all who apply may be granted permission to photograph, on payment of a small fee of say \$1 or \$2 per day. It is claimed that the enormous number of licenses that would be issued in this way would bring far greater monetary returns to the management than could be hoped for by any exclusive policy.

THE Portland Camera Club have just closed a most interesting series of exhibitions of views embracing California, and a large number from the Hartford and Waterbury (Conn.) Clubs, and the Medford, Mystic and Springfield Clubs of Massachusetts. The California views were thrown on the screen and accompanied by a most interesting lecture.

WE hail with pleasure the advent of a new weekly journal (English) to the field of photographic literature published by Messrs. Piper and Carter, of London, who have been for so many years connected with the publication of the *Photographic News*. The new sheet comes out under the title of *Photographic Work*, and the aim set forth by its publishers is, to put fully before their readers details of all phases of photographic progress. We predict for it success.

OUR absence from the Photographic Exhibition of the Manhattan Chapter of the Agassiz Association, which was held from May 20th to 27th, was a source of regret to us, but unavoidably so. We are informed by those who attended that the occasion was one of much pleasure and profit. Our thanks are proffered for the kind invitation extended.

MR. JOHN R. CLEMMONS, of Philadelphia, has produced some beautiful brown tones in plain silver prints, using the old-time gold-toning bath, and adding to it aluminium chloride. His formula is as follows:

| | |
|---------------------------|-----------|
| Aluminium chloride | 20 grains |
| Bicarbonate of soda | 85 " |
| Water | 12 ounces |

A half ounce of gold solution, 1 to 15, is added, and the prints, fixed in a hypo bath of 1 to 6 for about five minutes, yield beautiful tones, with the whites clear and great detail in the shadows.

THE Albany Camera Club gave on the 14th ult. a fine lantern-slide exhibition made up of two parts, one of which related to home and the other to foreign topics. A large audience and much enthusiasm were the result. This club is in a very flourishing condition.

IT is stated on excellent authority that if two gelatino-bromo-iodide emulsions, otherwise exactly alike, are treated, the one with ordinary commercial silver nitrate, and the other with fused silver nitrate, the latter will be the more sensitive of the two. This is a fact that is well worth knowing in these days of gelatino-bromo-iodide work.

MR. JOHN E. DUMONT gave a valuable demonstration of printing on carbon paper before the Rochester Camera Club at its May meeting. Talks and demonstrations of this kind from competent authorities cannot be too often listened to by the progressive clubs of the country.

THE Camera Club of West Somerville (Mass.) has organized. Its officers are not yet announced.

THE second annual exhibition by the Portland Camera Club occurred May 14th to 21st, and embraced a charming collection of work by its members. The catalogue was gotten up very tastily and in such a manner as to be easily understood. This exhibition has doubtless done much to increase and solidify the already good reputation of the club.

IF a daguerreotype that has been tarnished by age and in being cleaned, shows a veil or drying marks upon it, it may be taken for granted that the final

washing water was not pure—and it should, after a thorough washing in water, be again washed in distilled water, and, before dry, should be held over the flame of a spirit lamp, held in a slanting position and gradually heated all over. Pure water is absolutely essential to a complete renovation of any daguerreotype after treatment with cyanide of potassium to remove the tarnish.

SEVERAL of the prominent amateurs about the country are devoting a good deal of time to the application of photography to a work which will in time be invaluable. They are collecting photographic records of the older styles of architecture which are rapidly giving place to new, and in future years these records will be viewed as a part of the history of this country which we can not well dispense with. Why can not more of us take up this same study with advantage to ourselves and others?

AN attempt is being made to form a camera club in Lawrence, Mass., an exhibition of the work of amateurs of that city and Andover having lately been given with marked success.

THE Society of Amateur Photographers of New York, feeling that their meeting hall is not of sufficient size to accommodate all who would like to attend their lantern exhibitions, have issued 250 subscription tickets at \$5 each for a series of eight public lantern-slide exhibitions during 1892-93, to be held at Chickering Hall. Each subscriber to be entitled to two cards of admission for each exhibition. It would seem that some such plan might prove popular.

We would acknowledge receipt of a print of child, cabinet size, from Charles G. Barbé, of Homer, La., made with a half portrait lens (E. A.), which shows great merit, both in lighting and pose and development as well, the shadows being rich and deep, yet full of detail. We congratulate Mr. Barbé, and shall be glad to see more of his work.

LETTER FROM GERMANY.

BY DR. H. W. VOGEL.

Intensity of the Light of the Sky.—Tele-objective Glasses.—Changing in the Sensitiveness of Dry Plates.—Lectures on Photography to Official Teachers.—New Astronomical Discovery by Means of Photography.—Manufacture of Gelatino-Chloride of Silver (Aristo) Paper.

RETURNING from Teplitz, where I stopped for the cure of my rheumatism, I find on my table a great many letters with inquiries even from America. One of your scientific readers in California calls my attention to a mistake in my correspondence of your issue of November 28, 1891, regarding the formula for the intensity of the light of the sky in different distances from the sun. This, indeed, should be $I \operatorname{cosec} \alpha$, instead of $\frac{I}{\sin. \alpha}$.

In the meantime several interesting photographic items have been published. The whole photographic press speaks about tele-objective glasses. I have not seen any of them yet, but gave my opinion about them in my last letter. It seems that it is not necessary to buy a special lens for tele pictures. Steinheil,

in Munich, the eminent optician, writes to me about his own tele-objective glass :

“The objective consists of an ordinary rapid lens behind which a negative enlarging lens is fixed. This construction puts every photographer or amateur in the position of acquiring an enlarging lens (which, according to size, might cost from 30 to 60 marks), as well as the corresponding mounting, which of course must be made very exact, so that the axis of the objective will fall exactly together with the axis of the enlarging lens, and adapting a distance objective himself, if he is in possession of any good, rapid objective of not too great focal length.”

Much has been written about the sensitiveness of emulsions, but it is generally considered sufficient if the dry plate boxes are labeled 22 or 24 degrees Warnerke. This, to say the least, is very uncertain, as even the Warnerke scales do not all agree. The luminous plate, whose brightness is very variable, may lead to the greatest errors, so that according to Professor Weber it should be rejected entirely. The astronomer Wolf, in Heidelberg, has now made the observation that the plates change their sensitiveness considerably. He writes in Eder's Yearbook :

“Particular care is necessary with fresh plates. When formerly I received plates from the manufacturer I always made the observation that the new plates were not as sensitive as the previous ones, and that I had to expose much longer than before, so that it almost appeared as if the plate manufacturer was turning out inferior goods.”

For astral photography I used principally Lumière's, Schleussner, Bernaert, Wratten and Wainwright's plates. All these plates showed signs of apparent weakness; mostly the Lumière plates; Schleussner not so much.

The appearance is so strong, that last winter new plates of Lumière, with even three times the time of exposure, hardly showed the objects on the negative, which were distinctly visible on plates received in a previous shipment. I could not obtain, for instance, with three hours' exposure, those stars and nebulae which previously I had photographed with the greatest facility in one hour.

It was known to me before that the plates change their sensitiveness somewhat, but that they will increase to three times their original sensitiveness I could not expect. And still it was so. The same plates of Lumière, which, in the beginning, had so little sensitiveness, became as sensitive after five months as the previous ones, and surpassed all my other plates in sensitiveness. The orthochromatic plates seem to be less subject to this change of sensitiveness.

But the increase of sensitiveness raises by no means more and more in the course of time. Mostly it soon reaches a maximum, at which it remains for a longer period. Later on, all plates will decrease again periodically in sensitiveness.

Hence follows the rule that each kind of plates should be tested as to the beginning of its greatest sensitiveness.

For Lumière plates it would be from the fifth to the seventh month after manufacture. Much can be gained by having regard of this ; under some circumstances three to four times the sensitiveness. But whether the duration of this ripening time, conforming to manner of production, remains always exactly the same, is not very probable, and remains questionable.”

According to my opinion, the gelatine here plays an important part. Lately

I had to examine quite a number of different kinds of gelatine. Ordinarily they give emulsions of high sensitiveness only if ammonia is applied after cooking. Only one kind of gelatine, that of the Wurtemberg gelatine factory, I found, which by cooking alone gave just as sensitive emulsions as with ammonia.

Photography has been recognized at last by the ministerial department of instruction as an important part of general education.

By direction of the same a course of lectures for teachers of the high schools took place in Berlin from the 20th to the 30th of April of this year. The leader of the same, Professor Dr. Schwalbe, opened the course with a lecture about the methods of chemico—mineralogical tuition. The purpose of this arrangement was, to explain to participants the latest progress upon the fields of Natural Science by lecture and experiment.

Of the different lectures may be mentioned: Prof. Dr. Foster, "The Present State of Astronomy"; Prof. Dr. Dames, "The New Theories of Mountain Formation"; Prof. Dr. Bezold, "The General Circulation of the Atmosphere"; Dr. Landolt, "The System of the Asymmetrical Carbon Atom and its Connection with the Optical Rotary Power." Dr. E. Vogel, about the latest photo-chemical researches and inspection of the photo-chemical laboratory of the Royal Technical High School. This lecture met with general approbation and the special approval of the director, Dr. Schwalbe.

In the meantime comes a new triumph by photography upon the astronomical field.

Herr Archenhold, of this place, has discovered by means of photographic views in the constellation of Perseus, a little north of the bright star χ , a nebula, extending over several degrees, which appeared upon the photographic plate of about the same intensity and was nearly of the same form as the well-known great Andromeda nebula. Only the interior parts of the Andromeda nebula appear much brighter, yes, the nebula matter seems to be wanting entirely in the middle of the new nebula—similar to the Ring nebula in the constellation of Lyra. Otherwise the new nebula has entirely the long form of the Andromeda nebula, its extension from southeast to northwest being approximately 3 degrees.

The most remarkable thing is that the older lists of nebulae contain no nebulae at this place in the sky, while the latest descriptive list mentions only a very faint nebulae at this place, discovered by Professor Barnard. While the nebula is photographically therefore among the brightest objects, it is perceptible to the eye only with the most powerful telescope. The problem finds its solution in this, that this nebula emits principally only blue and ultra-violet rays, for which our eye possesses none or very little sensitiveness. After this discovery it is not surprising if the new stars, which by photographic views of the whole sky are made known to us, give an entirely unexpected picture of the whole celestial constellations, and we may expect that the photographic views will disclose numerous celestial bodies whose light will never be perceived by a human eye.

But the history of the small planets circulating between Mars and Jupiter, has also entered a new phase by the discovery of further members of the system by means of photographic views of the celestial regions in question. Since the successful discovery of a new planet, by means of photography during the beginning of the year, new members of this remarkable group of celestial bodies have been discovered by the continued views of Dr. Max Wolf, of Heidelberg.

A plate taken on the 18th of March shows the characteristic long-shaped

picture produced by the motion of the planet during exposure; it is the 328th in the number of the small planets.

A further hitherto unknown planet was discovered upon two plates, taken by Dr. Wolf, March 21st and 24th; the same has been observed since through the telescope, after notifying the several observatories. It is planet No. 329.

Planet No. 330 has also been discovered first by photographic views. It was on plates taken at Heidelberg, March 19th, 20th, 22d and 25th, and belongs to the thirteenth order. It was afterward telescopically observed at the Vienna Observatory.

Chloride of silver gelatine or aristo paper becomes more popular every day. The following communication of Dr. E. Vogel about the manufacture of this paper, as executed in the photo-chemical laboratory of the technical high school, might therefore be of interest:

The first formula for such an emulsion is from Abney, as follows:

A.

| | |
|-------------------------|----------|
| Chloride of sodium..... | 4 parts. |
| Potassium citrate..... | 4 " |
| Water..... | 48 " |

B.

| | |
|---------------|-----------|
| Gelatine..... | 16 parts. |
| Water..... | 160 " |

C.

| | |
|------------------------|-----------|
| Nitrate of silver..... | 15 parts. |
| Water..... | 48 " |

B is placed in warm water until the gelatine has dissolved; C is then added, and finally A. After congealing, the matter is passed through a net, washed for thirty minutes in cold water, melted, after which 180 parts of alcohol and a solution of 2 parts of chrome alum in 120 parts of water are added.

Paper prepared with this emulsion has the disadvantage that it will not keep for a long while; it turns brown after a short time. If the emulsion is washed a longer time than mentioned the durability increases, but the pictures lose in strength.

On account of the great quantity of citrate of silver the toning process proceeds pretty slowly. Apparently sufficiently strong-toned pictures assume also oftentimes in the fixing bath a disagreeable brown color and fade considerably. If the emulsion is prepared according to above formula, but with an addition of free citric acid, the durability of the paper increases, but the toning process proceeds still slower.

Further tests gave the result that chloride of silver gelatine emulsions which contain no citrate of silver, but in place of the same superfluous nitrate of silver and citric acid, behave much more favorably; paper prepared with the same prints and tones quickly, and the durability is very good.

Emulsions prepared with citrate of potassium contain, in presence of more nitrate of silver than required for the formation of chloride of silver, always citrate of silver, but in emulsions containing no citrate of potassium but free citric acid, no citrate of silver will form, but the citric acid and the nitrate of silver remain intact.

The following formula has given me good results :

SOLUTION I.

| | |
|---------------------------|----------|
| Gelatine | 20 grms. |
| Chloride of ammonia | 1.5 " |
| Distilled water | 300 c.c. |

SOLUTION II.

| | |
|-------------------|---------|
| Citric acid | 5 grms. |
| Water | 40 c.c. |

SOLUTION III.

| | |
|-------------------------|----------|
| Nitrate of silver | 10 grms. |
| Water | 40 c.c. |

Solution I is placed in warm water (40 to 50 degrees) until the gelatine is melted, and Solution II is then added, under stirring, and finally Solution III is added. The emulsion is then filtered through flannel moistened with distilled water.

To coat paper with this emulsion, it is best to proceed as follows:

Baryta paper, as specially made for the production of chloride of silver gelatine paper and collodion paper, is placed in a tray filled with distilled water until evenly wetted.

It is then taken out, and with the Baryta surface on top, laid upon a clean glass plate somewhat larger than the plate. A piece of blotting paper without fibers is then laid upon the paper, and a roller or squeegee is run over the same, until it adheres evenly to the glass plate.

The edges of the paper are then fastened with gum paper.*

The glass plates covered with the paper are placed horizontally upon the table with the aid of a level ; the emulsion is then poured out and evenly distributed with a glass rod.

The surface of the paper must not be wet, but only moist, when the emulsion is poured upon the same. Wet spots should be dried up with the blotting paper. The temperature of the emulsion should be about 50 degrees C. ; if the emulsion is too cold, it will flow badly and become rigid before being spread upon the paper.

After congealing of the emulsion, the plates may be put in a vertical position to dry.

The dry paper, after cutting of the edges, can easily be stripped from the glass plate. The further treatment of the paper is the same as by the regular manufacturers.

A tone fixing bath should be used for toning.

To keep the paper for a longer time it is recommended to place the same upon coated side into a printing frame, keeping better under pressure than in the open air. This paper will keep well for several weeks.

If greater durability is desired a larger quantity of citric acid may be added to the emulsion.

With the same emulsion glass plates can also be coated. To facilitate the flowing of the emulsion and attain a better adhesion of the film to the glass, the plates are cleaned with a water glass solution 1 : 300.

Such plates are very suitable for the production of diapositives.

BERLIN, May, 1892.

* Too much soaking of the paper should be avoided, because it will stretch too much and tears easily by the too great tension during drying.

[From Our Special Correspondent.]

ENGLISH NOTES.

THE event of the month has been the opening of the first free public exhibition of "survey" photographs in the magnificent art galleries of Birmingham, the metropolis of the midlands. As the readers of the BULLETIN know, the originator of systematic photo-survey work is Mr. Jerome Harrison, and he contributes about a quarter of the one thousand pictures which form the first instalment of this county survey.

After remaining on exhibition for some three months in the local art galleries the photographs will be handed over to the Free Reference Library for safe custody in the future. The work has been taken up by some eight or ten other societies, but in a desultory and disconnected way, and with the object of binding together for this grand work all the three hundred photographic societies of the British Isles, Mr. Harrison read a paper on the subject in London before the Photographic Society of Great Britain on May 10th. He urged that the "parent society" (as the P. S. G. B. is still fondly called) should take upon itself the direction and organization of this grand work—a National Photographic Record and Survey. Such a task will be commenced, and must be completed; but I fear that the Photographic Society of Great Britain is in too "fossilized" a state to furnish the men, the energy and the funds which are needed to inaugurate this great movement.

On a fine May afternoon I formed one of a fairly numerous audience which had gathered in the historic room of the Royal Institution to hear Mr. F. E. Ives, of Philadelphia, give some account of his method for "Photographing in the Colors of Nature." The general opinion of the experts present was that Mr. Ives had obtained better results by the use of modern instruments and appliances; but that all the main principles upon which his work depends had been long ago announced by Duhauron, Cros and Dr. Vogel. But, after all, the methods of all these investigators is not in the direction of—indeed leads away from—the great problem of obtaining photographs in natural colors. The colors in Mr. Ives' pictures are not in his photographs (which are ordinary black and white positives), but in the bits of colored glass which he places in front of the said photographs in his triple lantern.

A few days back I had the pleasure of taking out for a walk a delightful little hand camera called the "Frena." It carries forty cut stout celluloid films which are separated by pieces of cardboard. The changing is effected by a brass framework which "engages" with nicks cut in the edges of the films and cards, and this enables the advantage of a swing back to be also secured. The "Frena" is at present made for lantern plate size ($3\frac{1}{4} \times 3\frac{1}{4}$) only, and when charged it weighs well under 3 pounds. It worked to perfection in my unaccustomed hands, and as a "memorandum camera"—to carry about with one regularly—I can imagine nothing better.

Messrs. Ross & Co., the famous opticians, have just introduced a new lens (named the "concentric") which is the result of the investigations of Dr. Schroeder into the improvements in lenses, rendered possible by the use of the new Jena glass. Among the advantages claimed are "fine definition, absolute equality of light over the field, flatness of field, and, on account of its thinness, greater rapidity than was obtained with the usual symmetrical lenses." I can endorse all of these claims except, perhaps, the last, as to which I think the gain

in rapidity is so small as to be scarcely calculable. The largest stop of this lens is about $f/16$; but for landscape with architecture, and copying, it is a really magnificent optical instrument.

The annual meeting of the Photographic Convention of the United Kingdom is this year to be held at Edinburgh, in the week commencing July 11th. It is curious to notice the mistaken ideas which have prevailed on either side of the Atlantic with regard to the annual gathering or "Convention" of photographers held in each country. *We* (I judge from the references in the English photographic press) regard your Convention as a wonderful success; and yet anyone who reads between the lines of the American journals, can see that it is a consistent failure, relieved by spasmodic efforts at success. But if your Convention is a failure, what must be said of our dismal imitation? A meeting is announced at some interesting spot—Chester, Bath, etc. The expectations of the inhabitants are aroused, and they roll up in their tens on the opening day, headed by the Mayor, in his robe and chain of office. To them there appears some score—or perhaps even thirty—of photographers from London and other "furrin parts," consisting of the usual incapables who have hitherto "bossed the show." Excursions are made (always in heavy rain), and papers read before audiences of from fifty (on the opening night, when refreshments are provided free) to five at the finish. This year there is some hope of better things; for the new heads of the Convention (Davidson as President and Cembrano as Secretary) are a long way ahead in business powers and in popularity over their predecessors. Perhaps they may be able to persuade as many as fifty English photographers to follow them to Edinburgh, but I doubt it.

May has brought us another penny weekly photographic paper, under the title of *Photographic Work*. It is edited by Mr. Bolas, and published by the firm of Piper & Carter. These gentlemen were formerly associated in the production of the *Photographic News*, and the newspaper has a great external similitude to "our oldest weekly."

The telephotographic lens of Dallmeyer, by which distant objects are represented by comparatively large images, will place a new power in the hands of photographers; but too much must not be expected of it. For instance, it will give blurred images, should heated air-currents intervene between the camera and the object depicted. Such differences in the density of the air causes great annoyance to astronomers, and the new lens may be said to stand midway between a telescope lens and an ordinary photographic objective.

Rodinal—the new developer—is being largely used by professionals for studio work; the reason being that it gives rather thin images which lend themselves to the methods of retouching and working-up, which are now so indispensable to success in portraiture. But for landscape and general work the good old pyrammonia developer still remains unequalled; at least that is the opinion of

TALBOT ARCHER.

An interesting photograph (says the Vienna correspondent of the *Daily News*) was shown at the last meeting of amateur and professional photographers in that city. It was that of a Fata Morgana seen last autumn near the Hungarian village of Karlova. The foreground of the picture is a grass plain. Over this appears a broad streak of light looking something like a river, from which rises a picture of hills, groups of trees, and fields, all connected with each other and forming a harmonious whole. The photograph was taken by a photographer named Odal, at Nagy Becskerek, in Hungary.

[From *Photographisches Correspondenz.*]

ABOUT LICHTDRUCK.

BY ADOLF BEYERSDORFF.

(Continued from page 307.)

THE washing of the plates in winter should be done in warm water of 10 degrees above zero R., and the printing plate should also have reached this degree gradually, before the washing takes place; in summer the temperature should not be above 20 degrees, or ice has to be applied to cool off. If the plates appear white in the strong half tones, they are sufficiently washed; they are then placed upon a rack to drain. In summer the plate should be liberated from the superfluous water by touching the same with a soft rag and not by wiping; the gelatine film not exposed softens too much at a high temperature, bringing evil consequences in printing, particularly if the film contained little chrome alum.

The picture of a half-tone plate should, if held toward the light in a still moist condition, be visible in delicate penetrating matt, but the matt grain should be distinguished by a darker or lighter matt according to the influence of light. In dry condition the plate should have the same character in transparent light, only that the plate is now a little more transparent. Looked at from a slanting direction the finest modulations can be recognized in the depths as well as in the high lights. If a coarse grain is seen here and there, rough prints will be obtained; too thick a film is the cause here. Another cause of coarse grain formation is the entrance of air into the drying oven during drying, but it is remarkable that this last defect is very seldom observable in the print.

The Lichtdruck is not a purely mechanical process as other printing processes, but proper judgment and a certain degree of taste are required. I have taught persons much easier and quicker and have made better printers of those who never had a roller in their hand, than regular stone printers, because the latter have too heavy a hand and are accustomed also to the old manner, to press and push too hard with the roller. Delicate half-tones particularly give these difficulties, whereas prints in line manner they judge correctly.

There are several systems of Lichtdruck presses; the most suitable are those where the tension of the pressure is regulated with the hand; they can be had in almost every factory of lithographic presses. The fastening of the printing plate in the press is done in the following way: An iron slab 3 to 4 c.m. thick and well planed, with holes at different distances corresponding with the sizes of the printing plates, is screwed upon the press-table; upon this iron slab a strong piece of plate glass is laid, which must be larger than the printing plate to be laid on the same afterwards; the glass plate is fastened with two iron rules, provided with holes, which correspond with those of the iron plate, and counter-sunk screws. To judge about the progress of rolling, a white paper is placed between glass and iron plate. The printing plate as well as the supporting plate have to be very clean, as the smallest grain of sand or dirt would cause a breaking of the printing plate. The same should be moistened with some clean water around all four edges of the reversed side. By circular motions it is now put into the correct position; if not too much water was applied for moistening, it is impossible to remove the plate; by the adhesion of the water both plates stick as if glued together. The rolling and printing can now be proceeded with.

A Lichtdruck plate can never be printed without moistening; for that purpose the following moistening solution is applied :

| | | |
|--------------------------|-----|--------|
| Glycerine..... | 600 | grams. |
| Ammonia..... | 100 | “ |
| Hypsulphite of soda..... | 20 | “ |
| Water..... | 300 | “ |

When mixed and filtered, a part is then poured upon the plate, and with a soft, clean sponge distributed evenly over the whole printing plate. This etching liquid is left for several minutes upon the printing plate, and with the tips of the fingers careful examination is made to see if the film has swelled in all parts; if sufficient, the etching fluid is taken up with the sponge and the remaining moisture removed with a soft cloth, not by wiping, but simply by touching up; the cloth must be without seam. A sheet of copper-print paper is now laid upon the plate and pushed with light pressure through the press.

If the finger slides easily over the moist film, the plate is too moist yet; the paper has to be turned once more, and the plate has to go again through the press; if the finger passes now somewhat heavier over the plate, the work with the ink-roller can commence.

On the ink table there should be two lithographic stones, one on which the black ink is prepared, and one upon which the tone-color is rolled in. Both colors cannot be used in the condition they are bought in the market, and have to be first made thinner. A piece the size of a small nut is taken out with the spatula, a little medium varnish is added and carefully worked in with the color; the color has to remain tough, and should not run. If the spatula is taken out of the color, the latter must have a short break and not stretch like rubber. It is very good if a drop of pure olive oil is added to the color; it will roll in better on the picture. The mixing of the colors should always be done on one corner of the stone, because the stone is used for grinding and rolling.

When printing in black, particularly for line pictures, black ink should be laid on upon both stones, only that the tone-color is mixed with a little more varnish; it is also good if a little indigo blue is added to the tone-color, the strength of the color being increased. In imitating the photographic tone, the color is generally too red and a little black has to be added. A printer who has taste for colors will produce sometimes excellent effects. Care should be had of so-called inconstant varnish colors, because they change in the light and give dirty yellow-brown pictures. If both colors are now thoroughly mixed, a little is brushed across the stone, also a little over the roller; the color is now rolled in all directions, changing the roller sometimes in the hand, so that the right side come to the left and that the whole stone obtains an even color coating; the roller should look likewise. If the color has not too much varnish, a rustling noise should be heard during the rolling. If the rolling of both colors is ready, the rolling of the printing plates can commence.

The printing room should be cool in summer and well heated in winter; in both cases it must be entirely dry. The best printing plates will print hard in cold rooms; in damp rooms the plates will absorb too much moisture, and in an overheated room the film will very soon soften and be injured. The first prints are generally not fit for use; the plate has to be worked in first, and only after the sixth or seventh print can it be recognized whether the whole plate or

only parts of the same have to etched over again, or if the plate was already too much moistened at the beginning.

The commencement of the rolling in is always done with the black roller, beginning outside of the picture, keeping up a rolling motion, and without holding too tight on the covering of the roller one passes over the same at even and not too strong a pressure. The following rules should be observed as being a prime condition for all kinds of rollers: When the roller is moved slowly with powerful pressure, it will deliver much color to the plate; with strong pressure and quick rolling the color is removed from the plate again, and the same also takes place with quick rolling and weaker pressure, only gradually and finer. With the tone roller more or less middle tones are obtained by slow as well as by strong pressure and slow rolling; by quick rolling the lights increase. It is also good to change the roller oftentimes, so that the left side comes to the right and the right side to the left hand; this will equalize the uneven color deposit upon the roller. By these means the picture can be produced in its finest brilliancy. The art of good printing is: intellectual power, taste and some sense of beauty, the necessary inclination and love for the matter; and a skilled printer is sometimes independent in an astonishingly short time. Disappointments should never discourage.

The rolling with black should not be completely executed, and only the deep and half shadows should be blackened. If the plate takes too much color during rolling, it is overprinted, or it has not yet been sufficiently moistened; finally, there may also be too soft a color or too much of the same upon the roller. The color should be tested first before the etching takes place. Overcharging the picture with color gives the same a rough, broken appearance; if the color is too thin, the plate will look greasy; if not sufficiently moistened, the printing plate looks weak after rolling. The roller must be liberated from all color; the roller passes rapidly and with power over the picture, taking along as much color as possible, and if, in spite of this, the necessary clearness is not obtained, the plate has to be cleaned thoroughly with oil of turpentine from all color; no oil of turpentine should be spared, and a soft cloth should be held for this purpose, which is protected from dust and dirt and can always be used. If the plate has the same matt appearance as when it was laid in the press, the etching can commence. The plate is wiped with the wet etching sponge evenly, letting the etching fluid act for some time; it is then carefully dried and the rolling is started again, but out of precaution a stronger color is taken and the rolling is done quietly and with less force until the depths appear clear and strong in all details; this is generally very observable during the second etching. The work commences now with the tone roller, with weak pressure and slow rolling. If in spite of all this the picture does not appear entirely clear, the etching has to be repeated, but 10 grams of ammonia are added to 100 grams of etching fluid; the other work is proceeded with as before. If it is not possible yet to obtain a desirable print, the plate has been copied too long.

(To be continued.)

IN PHYSICS.—Professor (lecturing on galvanism)—What would be the effect, Mr. Broken, if you should hold a quantity of gold in one hand and of silver in the other?

Broken—I should experience a decided shock.—*Yale Record*.

A HINT FOR SUMMER WORK.

BY MARY SCOTT BOYD.

WITH the summer days comes a quickening of photographic zeal. Now is the time to add pictures to the collection which already represents much pleasant work in the past. But to those who will be unable to take trips and excursions, and who have apparently exhausted all the views of their own home and vicinity, the inspiration of sunny days, a rare actinic atmosphere and every other favorable circumstance for work with the camera, will all be wasted. To such I wish to give a new and fresh interest.

Even if the work does not seem at first specially enticing, it will in the end arouse enthusiasm. I write to those amateurs who have little people, baby lives in whom they are interested, and who has not in the homes of friends, if not in their own? There are few children to whom poetry is not attractive. There is something very appealing to young ears in jingling rhymes. But when eyes as well as ears are entertained, and illustrations fill the page, the child's pleasure is increased tenfold. I have always found, however, in showing books to the younger children, if I called the dog in the picture "Lassie," after the household pet, or the horse "Daisy," after the faithful beast which took them their daily rides, that their enthusiasm was unbounded. This gave me my hint. And fun for the little people has afforded inspiration for many hours of work.

The opportunities for taking pretty and odd little pictures for which the children serve as models are innumerable. All the well-known places about the house, all the pets of the house, and the grounds, the favorite trees and shrubs; in short, anything and everything can be taken. When all is done and the summer ended, you will have plenty of work for the long autumn evenings. Insert the pictures in an ordinary common-place book. Copying verses which will be appropriate, and you can find hundreds, or, better still, use your inventive powers and write a story in which some familiar incidents are told. If these ways of using the pictures seem too laborious, buy any one of the illustrated books so popular at holiday times, and paste over its pictures those you have taken.

It is hardly necessary, I am sure, to enter protest against the silver print. Use carbon and platinum for the black, grey and sepia tones. These two printing media take more time and are more expensive than the others, and many may prefer bromide printing, which is not by any means unsatisfactory.

I hear someone say, "All this trouble for children?" Yes, but it is not trouble to please those we love. Perhaps, too, we may appeal to an unawakened sense of the artistic, and the sun pictures after awhile will not content the children; they will want to hold pencil and brush themselves, and we may be educating the Corot, Bonheur or Meyer von Bremen of the future.

However that may be, begin now to fill a book with well known and loved views and genre studies, and the children will not be the only ones who will enjoy the work of your well-spent hours.

HANDWORK.—The Unhappy Father—You should be ashamed to idle all the time. It is time you were working.

Weginald—Why, Fathah! I do wohk! Don't I woll my own thiggawettes, wegulahly?—*Washington Star*.

CAMERA CLUB PHOTOGRAPHIC CONFERENCE.

THE PRESIDENT'S ADDRESS.

BY CAPT. W. DE W. ABNEY.

ONCE more the Camera Club meets in Conference, with a bill of fare as varied as at its other conferences, and no doubt at the close of it the opinion will be expressed that this conference is in no ways inferior to its predecessors. If the address with which your President has to open the proceedings is, however, duller than usual, it must be laid down to the fact that he has been overwhelmed with work, official and other, which has taken his thoughts in directions far afield from photography.

In August last, the second Photographic Congress met at Brussels, and England was represented at it by Mr. Warnerke and the speaker. Some progress was made in fixing international standards for photography, a sincere desire being evinced on all sides to make them acceptable to all nationalities. The report of the Congress is only just out, and has not had time to permeate into the journals completely, and thus it cannot be stated as to what extent they will be well received and adopted by this country. The British inch and duodecimal system is so implanted in the British mind, that in any case it will be a struggle to secure this uniformity.

At last year's conference I made some remarks on the process of M. Lippmann, by which he showed that the different colors of the spectrum could be given to a photographically developed image after exposure to its action. Unfortunately the solution of the problem of impressing a plate with permanent colors at one operation does not appear to have made much advance: and I still hold to the opinion which I have expressed more than once, that the problem is one which in our present state of knowledge will be solved only in the very remote future. What M. Lippmann has shown is that the colors he does obtain are permanent, as they are the colors of thin plates, and this being so, they are more brilliant when examined under certain conditions of light than in others. But the hue of the color depends on the length of exposure given to the plate, and it does not seem that the colors obtainable are dependent on the color of the light used to impress them. I myself have obtained both a red and a blue color from white light, a red color from exposure to bluish light, and a blue from red light, though not with the great brilliancy that M. Lippmann has secured. The colors, as might be expected from their cause, are not pure spectrum colors. I have examined one of Lippmann's photographs spectroscopically, and the results observed militate against a reproduction of the same saturation of colors that is found in nature, even if they could be produced by an equal exposure, since mixtures of the photographically produced colors would seem to necessitate, at the same time, the production of white. It must be recollected that a color may appear to the eye to be the same color as a pure spectrum color, although in reality it is a mixture. Such colors when mixed together, while giving to the eye the compounded color which a mixture of the same hue of pure spectrum color would give, will also be contaminated with a percentage of white light. Applying this to the colored spectra, if a mixture of red and blue (*i. e.*, purple) is to be photographed, the color on the photograph will be a mixture of the impure red and blue of the photograph, and hence the purple produced will be unsaturated. With colors produced by Becquerel's method this is also the case, but to a more limited degree.

In the theory of photography we have had a speculation put forward by Mr. Elder, a member of our Camera Club, as to the coloration of silver chloride by the action of light. He has endeavored to treat it on the same principle as that in which Carnot treated his theoretically perfect heat engine. In other words, he applied a photo-dynamical theory to account for the decomposition of silver chloride. It is not for me to say how far Mr. Elder proved his case, but it can safely be said that every one who heard his paper will have come to the conclusion that it was an excellent type of scientific thought, and an endeavor to solve a problem by a mathematical investigation.

The experiments of which the paper was suggestive, even if the theory will not bear the strictest criticism, will, if carried out by a thoughtful and intelligent experimenter, go far to throw light on the action which really does occur. But we in the Camera Club I hope have not heard the last of the paper itself, for whilst it worthily occupied the attention of some of our most eminent physicists, it has not yet received all the attention it deserves from the chemist's point of view.

In another direction we have had Professor Vernon Boys extending the application of shadow photography beyond the limits which he showed at the conference last year. For some purposes photographs taken by the light from the spark of a Leyden jar will be of immense service in the investigations of certain physical problems. Photographers may take Mr. Boys as a typical experimenter in the investigations he undertook to register at a given instant what was happening in the flight of a bullet. We read of the king who, before he makes war, counts the cost, and does not commence before he has everything ready, thus making sure of reaching his ultimate goal. To find out the spark which, while being most photographically luminous, was yet of sufficiently brief duration to render it serviceable for getting a sharp impression of the shadow of a rifle bullet speeding through the air, making it apparently motionless, was the problem Mr. Boys set himself to solve. Step by step he proved that a spark taken between copper terminals, though not giving the brightest light, gave the sharpest image; and that though the leap across the air space of the Leyden jar might occupy hundred thousandths of a second, yet the time during which the spark was most photographically active was less than a millionth of a second, and that it was confined to a space close to each terminal. This limit of duration was only obtained when a short circuit of wire was used. In this small lapse of time during which the light lasted there was sufficient energy radiated of an efficient kind to decompose the molecules of bromide of silver 2 feet off, and give an image on development.

The smallness of the duration of the spark which enabled him to obtain his photographs leads to a somewhat curious result as to the character of its luminosity. Suppose a magnesium light, burning 120 grains of magnesium in one minute, is able to effect a similar photographic decomposition at the same distance in $\frac{1}{1000}$ second, then .02 grain of magnesium is burnt in that time. It therefore follows that Boys' spark is equal to the burning of .02 grain magnesium, but his spark lasts only about $\frac{1}{2000000}$ second, the spark must therefore be 10,000 times more luminous than the burning of .02 grain of magnesium, and if it were a continuous light would be equal to a magnesium light burning 1,200,000 grains of magnesium a minute, a light terrifically brighter than that of the sun when the minute area the spark occupies is considered. Even if we diminish this ten times the light is enormous. This light of the spark was therefore sufficiently brief to enable him to photograph as if without motion the bullet in its rapid flight when passing between it and the plate.

In astronomical science photography still continues to lend its best aid to the observer. The new star which has recently been discovered has been photographed, and its spectrum photographically registered from time to time, so that we know its life history almost from its discovery, and the spectra show the changes it is undergoing. The reason of its present visibility in the heavens has been ascribed to various causes, and science has not yet settled definitely whether the correct one has as yet been given. Be it due to a clash of meteor swarms in space, or be it any other cause, the unbiased photographs will remain as records which can be examined and criticised at leisure in the future as well as now.

The Astronomer-Royal seems to have been able to confirm the theory that is held that the intensity of light and length of exposure are interchangeable at all events for the light from stars. The faint stars of high magnitudes he finds are photographically impressed on the plate in the time which was calculable from the law; that is to say, the magnitudes determined by photography and by the eye agree together.

It must be recollected that the law of interchangeability of exposure and intensity

of light need not necessarily hold good for light of very feeble intensity. Though the stars are faint, yet it by no means follows that the light they emit is feeble. The point of light is so small that it becomes invisible. The size of a light has a good deal to say as to its visibility. I wish to make a remark or two on the subject of photography with these feeble lights. In making experiments on color recently, I found that green light, when it illuminated a screen with an illumination of $\frac{1}{100000}$ of a candle placed a foot off, was insufficient to cause it to be visible, while with a red light the screen was invisible when it was illuminated by $\frac{1}{10000}$ of a candle. Now as the cause of visibility in the eye is more than probably due to a change in chemical composition of something within the eye, it is presumable that, with lights of the feeble intensity just indicated, the illumination of the screen radiated to the eye is insufficient to cause any chemical decomposition to take place in the eye. If, then, we have a limit where chemical decomposition within the eye will not be caused by light, we may argue that there may probably be a limit of intensity of light below which sensitive salts of silver will not be decomposed. What that limit may be I cannot say, but perhaps it may not be so very far below the intensity of light which the photographer may sometimes, though rarely, be called upon to use, as may be imagined. If there be a limit of intensity below which no chemical decomposition takes place, it is evident that when that limit is approached the exposure necessary to produce the same photographic effect as a brighter light would do will have to be increased beyond that which would be calculated it should receive if based on the ordinary law. Researches of my own have also shown that the general color of a landscape as seen by moonlight approaches closely to that of which the photographic plate takes cognizance. It is probably for this reason that a photograph taken in sunlight with very short exposure is often mistaken for a view taken by moonlight.

Turning to a totally different aspect of photography, we come to the means that should be adopted to give instruction in its various branches. We have a Government School at Chatham, of which I am proud to say I was the first head, and in its most branches of photography are taught with the best effect. But what we want is an institution which shall be open to all; where there are competent instructors in every branch, and from which a student can issue with a certificate of competency. This subject has occupied the minds of many, among others the members of the Camera Club, who, I am glad to think, are always willing to put themselves in the fore-front of progress as far as photography is concerned. A Photographic Institute is required, we are told, and I believe it is becoming as necessary as other kindred institutions. But ways and means are the difficulty. Let us somehow or another endeavor to start such a one in a modest way, and not aim too high at first. A modest building, a modest equipment, and last, not least, modest instructors, will soon show the public that the Institute is worthy of support.

ON CHEMIGRAPHIC ETCHING.

BY MR. LEON WARNERKE.

[Before Camera Club Conference.]

THE subject I intend to bring before this meeting is not wholly new. I have myself had occasion to speak on the subject before; but in this country the processes of photo-engraving are so neglected, that to bring before you any one, and especially a very simple and easy method, is useful, and this is my excuse.

Some twenty-five years ago Mr. Merget, a French savant, discovered that when a zinc plate is partly covered with deposit of another metal, and dipped in sulphuric, hydrochloric, or even organic acid, it is attacked by the acid only in the part covered by the deposit, but if nitric acid is used, then the uncovered parts of the zinc are acted upon by the acid. In 1873, another savant, Mr. Gourdon, made a communication to the Paris Academy of Science on the subject, mentioning that sulphuric acid could be

diluted considerably, and that this dilution varies according to the metallic salts used, as follows :

| Metals. | Volume of Water to 1 Volume of Sulphuric Acid. |
|---------------|--|
| Cobalt..... | 10,000 |
| Nickel..... | 7,000 |
| Platinum..... | 7,000 |
| Iron..... | 7,000 |
| Gold..... | 5,000 |
| Copper..... | 4,000 |
| Silver..... | 3,500 |
| Tin..... | 1,500 |
| Antimony..... | 700 |
| Bismuth..... | 500 |
| Lead..... | 400 |

Taking this as the base of my experiment, I found that a very practical process can be based on this principle, and I succeeded in producing very fine plates for letter-press printing (in line) some eighteen years ago. The general outline of the process is as follows : On the zinc plate an impression is produced either by the asphalt process, or by the transfer in greasy ink, then the plate is immersed in the solution of a metallic salt producing a precipitate in contact with the surface of the zinc on the part not protected by asphalt or greasy ink. When such plate is next immersed in very dilute sulphuric acid, all the parts covered by the precipitated metal are violently attacked by the acid. After a certain time visible deepening of the etched parts is perceptible, but the metallic deposit still occupies the bottom of the depression, and the etching still continues, permitting to etch to a very great depth without injuring even the finest lines ; and this constitutes the great advantage of the process. The reason of this is obvious : the etching acid is so weak that it has no action on zinc ; consequently, when a groove is first formed, the side walls of it, consisting of pure zinc, are not attacked by the acid, while the bottom only, being covered with precipitated metal, is acted upon.

To illustrate this action on a zinc plate, a line is produced by a solution of nickel and another with salt of palladium. An extremely weak solution of sulphuric acid, about 1 per cent., is prepared in the dish, and the zinc plate with the two marks produced by the precipitated nickel and palladium, is immersed in it.

While the bare portion of the plate remains unchanged, quite a storm is produced by the violent evolution of the hydrogen from the parts where the precipitate was formed, indicating where the action of etching is taking place.

To test the value of the different metallic salts for the purpose in question, a zinc plate was covered with strips of different metallic salts, and submitted to the action of 1 per cent. solution of sulphuric acid during one hour. As you can observe, the plate was etched to various depths. Carefully measuring that depth, I have been able to establish in numbers the relative value for etching of the different salts used.

The following table represents the action of 1 per cent. solution of sulphuric acid during one, and the depth is in millimeters :

| | |
|------------------------------|-------|
| Nickel ammonio-tartrate..... | 0.13 |
| Cobalt chloride..... | 0.11 |
| Iron + copper chloride..... | 0.10 |
| Iridium chloride..... | 0.09 |
| Palladium chloride..... | 0.085 |
| Nickel cyanide..... | 0.077 |
| Chrom. chloride..... | 0.07 |
| Gold chloride..... | 0.07 |
| Silver ammonio-nitrate..... | 0.025 |
| Lead nitrate..... | 0.01 |
| Mercury chloride..... | 0. |

Another plate, similarly prepared and submitted to the action of 1 per cent. solution of nitric acid, indicates that etching was most marked in the strip covered with mercury chloride, mercury iodide and lead acetate, while it was not attacked in other parts.

In case the image is not produced with resinous or greasy matter, but with gelatine, such as a carbon print or silver gelatine, the metallic salt used to form the precipitation can be used in alcoholic solution. As a rule, alkaline metallic salts are more vigorous than acid when sulphuric acid is used.

Recently my attention was directed to the use of aluminium for photo-engraving processes.

This interesting metal can be obtained now at the very reasonable price of 7s. per pound, which, taking into consideration its lightness, makes it compete with copper in respect of price. My investigations are too incomplete to indicate the best use of it for photographic process; but its property (widely different from all other metals) requires quite different manipulation. This metal in rolled sheets is very hard, and is not affected by sulphuric and nitric acid, but is easily attacked by hydrochloric acid, and by caustic potash or soda. It can be annealed by cooling after being heated, becoming soft by the action of rapid cooling and hard with slow cooling. It acquires a very fine matt surface when acted on with acid, beautifully contrasting with the parts highly burnished; it withstands tarnishing action of the air and town atmosphere far better than silver, which suggests its applicability to ornamentation by photo-etching processes.

Trying it in the way just described with zinc, I found that it behaves in similar manner under the precipitated metals. I found even that such acids as sulphuric and nitric acid, although not having any action on the bare aluminium, act on it in the parts covered with precipitated metals vigorously. In one instance, when an aluminium plate prepared as above described had been immersed in strong nitric acid, the action became so violent, and the increase of temperature became so great, that the acid began to boil, and the plate was ruined before I had time to extract it from the bath.

The most extraordinary point, however, is the behavior of aluminium in presence of mercury.

If the surface of aluminium is touched with salt of mercury, such as bichloride, a dark spot of precipitated mercury is formed; if the plate is next wiped dry, the dark spot begins to rise from the surface, till in about ten minutes' time it reaches the height of 10 millimeters.

Examining it more closely, we find that the top is homogeneous, and it is supported by innumerable white filaments, looking like a forest grown from the surface of aluminium. Under the microscope each filament has a tubular structure, and if the filament be carefully extracted a small globule of mercury is perceptible at the end nearest to the aluminium plate. Evidently mercury is first precipitated in a fine black powder, and by accumulation of particles, forms a globule of mercury. This forms an amalgam, which, as soon as it is formed, is decomposed, alumina being formed, while mercury again forms new portion of amalgam, and that gives rise to the grooving of the alumina forest. When strips of different metals are precipitated on the sheet of aluminium, that part which is covered with mercury is etched deepest of all.

DISCUSSION.

Mr. S. B. Webber wished to know whether the metal acted upon was rolled or soft. Mr. Warnerke had stated that aluminium was harder than copper, but by the buckling noise made by the specimen he had bent it appeared to have been heavily rolled, and that might have affected the action of the acid.

Mr. H. Sutton asked if Mr. Warnerke had tried sulphate of copper to precipitate a thin film of copper on the aluminium, and whether electrolytic action had then been set up.

Mr. J. R. Dallmeyer inquired if Mr. Warnerke had tried etching on the surface of aluminium so as to obtain results which did not necessitate after-work on the part of the engraver. Was the after-work on the plates difficult? Alloys of aluminium were easily worked, but not the pure metal.

Mr. Banks stated that Mr. Warnerke had quoted the present price of aluminium to be 7s. a pound; at the Liverpool Section of the Society of Chemical Industry it had recently been stated to be 4s. a pound.

Mr. H. M. Elder remarked that some time ago Mr. Chandler Roberts-Austen had shown at the Royal Institution, that what had been called the forest-like growth on the surface of aluminium was produced when that metal was in any way amalgamated with mercury. If the method described by Mr. Warnerke caused the acid to eat straight down, it put a new power in the hands of the engraver. He thought that aluminium was a metal very easily acted upon by the oxygen of the air, and was at once attacked thereby when it was clean, a condition in which its surface was never found; it appeared to be thus protected by a thin film, so that metallic mercury had a difficulty in getting at it, and some time elapsed before the forest began to grow, but when the acid salt was applied, it began to grow at once. In the proceedings of a German chemical society, on the action of acids on zinc, it has been set forth that the probable cause of the stoppage under certain conditions of the known action of sulphuric acid upon zinc, is the presence of a layer of hydrogen; with sulphuric acid contaminated with chromic acid the action is seven hundred times as great. The means by which Mr. Warnerke had set up action upon the aluminium plate was a modification of the old copper-zinc couple of Gladstone and Tribe.

Mr. Leon Warnerke, in reply to the speakers, said that the aluminium employed had been hard rolled, but that the etching went on whether the metal were hard or soft. By heating, then suddenly cooling it, the metal becomes softer, unlike steel. He had tried sulphate of copper, and he had exhibited the result to them among a number of others at the outset of his paper. He worked upon the surface of the aluminium by first working upon it, almost as if using a plane, with a steel tool; then he rubbed it with charcoal by means of a snakestone; the snakestone must be soft and with proper snakestone and charcoal a good surface could be obtained upon aluminium. The metal does not plane readily, but drags; by applying turpentine or any mineral oil this difficulty is removed. He could work upon it fairly well with the graver, but had to dip the graver in turpentine now and then. He had paid 7s. a pound for his aluminium, and was glad to be told that it could be bought for 4s. He was much indebted for the information given to him by Mr. Elder, and that he agreed that aluminium and mercury can be amalgamated; in many chemical books such is stated not to be the case.

The President remarked that Mr. Warnerke was always practical. Gladstone and Tribe had stated, he thought, that the obtaining a copper-zinc couple by precipitating copper from sulphate of zinc was not their own invention; in all the cases cited by Mr. Warnerke a metallic couple was formed. In time the acid ceases to have any action, so in the old process the dish had to be kept rocking to remove the layer of hydrogen which had been formed; in the case before them that layer did not appear to have been developed. He felt doubtful, as yet, whether, with very fine lines, a little biting-in under the lines did not take place. Of all processes in the world the photo-mechanical processes were the most interesting, but they required an infinity of patience and great skill; the present race of photographers is not happy to have to exercise too much patience, but in the old wet plate days they were glad to do so.

WAS ABOUT TO OFFER HIM ONE.—Passenger (to old salt)—You never saw a sea serpent, you say?

Salt—No, sir.

Passenger—Then I am to understand you never drink?—*Boston Post*.

POSITIVES IN BLUE (CYANOTYPES).

DEAR BULLETIN:

In accordance with your request I send you some more translations from Mr. Fisch's book, and while the details may seem rather long drawn out, I give them carefully, as the process appears to be a valuable one to any lover of blue prints.

In 1840, Sir John Herschel found that certain salts of iron in maximum oxidation, in combination with an organic matter, applied on paper and then exposed to the action of the light, were reduced to salts in minimum oxidation. This principle proven, he continued his experiments during the succeeding year, and found that the per-salts of iron, mixed or combined directly or successively with cyanogen, gave different species of reproductions in blue designs on a white background, or white designs on a blue background. He called these pictures "cyanotypes." He found at first the "cyanotype negative" giving, when exposed to the sun under a positive, a white design on a blue background, or, exposed under a negative, blue designs on a white background. This process is known to-day under the name of ferropussiate. Then he discovered the "cyanotype positive" giving direct blue designs on white background with a positive, or the reverse with a negative. This latter process, which certainly is the most sought for to-day on account of the direct positive prints it yields, is known in commerce as "cyanotype process," etc.

Sir John Herschel said: "The varieties of the cyanotype processes appear to be innumerable; but the one I am going to describe merits particular remark, not only on account of the beauty of the results obtained by it, but also to explain the particular property possessed by the ammoniacal salts and other per-salts of iron (such as the ammonia-citrate, potassio-tartrate, the perchloride, the ammonia-tartrate) to receive a latent impression susceptible of being rendered visible by a large number of re-agents.

This process consists of simply applying on the paper ammonia-citrate of iron (or prepared by the other per-salts of iron mentioned), which will give the latent image with a very thin and equal coating of a solution of yellow prussiate of potash. The latent image, nearly invisible, is negative; but as soon as the latter solution is applied (and this should not be done with too weak a solution), the feeble image will disappear and be transformed into a positive image of a strong violet blue on a yellowish green background very clearly defined. If at this moment the print is plunged into water it changes at once to prussian blue. If, however, the reaction of the prussiate bath is not checked properly, after the image has obtained its maximum of clearness, it will become blurred or fogged, especially if the quantity of liquid applied has been greater than the paper can absorb. If, on applying the brush, you stop or pass several times over the same place, the effect produced will be similar to an engraving on wood carelessly made and badly printed; all the strong shadows will be filled up and the half tones defective.

In order to prevent this inconvenience, a solution of gum arabic can be added, which will prevent its penetrating too deeply in the pores of the paper, and at the same time permit the prussian blue to agglomerate and fix itself on the fibers of the paper. This addition of gum arabic permits of spreading a more even coating on the paper, and when it is perfectly dry, if the revelation has not been sufficient, you can repeat the application.

In 1863, Messrs. Baudesson and Houzeau, of Reims, made known a process giving blue designs on a white background, by sensitizing a sheet of paper by the application of an oxalate, tartrate or citrate of iron, exposing to the light, and then developing by an application of yellow prussiate of potash and a weak acid bath. Basing on these processes and borrowing from M. Poitevin, I utilized in 1875 these given for producing direct positive prints from a copy made on paper or tracing cloth in strong blue on a perfectly white background. The details of the process are as follows:

Prepare the three following solutions:

No. 1.

| | |
|-------------------------------|------------|
| Gum arabic, best quality..... | 170 grams. |
| Water..... | 600 c.c. |

No. 2.

| | |
|--------------------|-----------|
| Tartaric acid..... | 40 grams. |
| Water..... | 100 c.c. |

No. 3.

| | |
|--------------------------|-----------|
| Persulphate of iron..... | 20 grams. |
| Water..... | 100 c.c. |

(The last solution can be omitted.)

When the gum of the first solution is perfectly dissolved and the solution clear, filter it. Then add solution No. 2 to the gum solution, stirring lively all the time, and finally, if used, the solution of iron (No. 3). When they are all mixed add 110 c.c. of liquid acid perchloride of iron, at 45 degrees Baumé, stirring constantly; then let it stand 24 hours in the dark. In order to use this mixture, add distilled water until the liquid weighs no more than 14 degrees by Baumé's aréomètre. It is understood that when the solution No. 3 is omitted, it is best to repeat the quantity of water in the two first solutions, adding enough to make a quart of solution, and afterward dilute to the 14 degrees. The solutions must be mixed in the order indicated, because, if you put the perchloride in the gum first, it would be instantly coagulated, and would only become liquid by an excess of a solution of tartaric acid. When the acid has already been added to the gum solution the addition of the perchloride will not cause coagulation. Filter it into a bottle and keep in a dark place. It will retain its good qualities for a long time.

In place of the gum arabic, gelatine or dextrine can also be used, but the gum is preferable on account of its greater solubility in cold water. The perchloride of iron that gives the best results is the syrupy liquid of 45 degrees by the aréomètre Baumé.

To sensitize the paper, take a good paper, well sized, and by means of a large, soft badger brush apply an equal, uniform coating of the liquid, avoiding streaks, and toward the end pass the brush lightly over the surface lengthwise and crosswise until it is as uniform as if varnished. Then hang it up in the dark to dry. This paper will keep good and sensitive for an indefinite period. We have some that was prepared nine years ago, and it is as good as the day it was made, but it must be preserved from the action of light and dampness. If by accident the paper thus prepared becomes damaged from one cause or another, and fails to give good prints, it can easily be restored by putting it in pure water and allowing it to remain immersed for three minutes. Then suspend it in a darkroom, and when dry it will have all the good qualities of freshly made paper, but prints a little more slowly.

To print on this paper, first put the design in the printing frame (with the side toward the glass on which the drawing is made); on this put the prepared paper, and to preserve perfect contact a good thick flannel pad should be added. Then place the back of the printing frame in position and fasten it. The frame should be placed so as to receive the direct rays of the sun or electric light, the time in full sunlight being from twelve to sixty seconds, depending on the season. In the shade it would require four times as long, and in winter longer than in summer. The time can be determined exactly by having a small printing frame, containing a piece of paper with lines drawn on it, with the same ink as used on the large design, and several strips of prepared paper put under these lines, same as in the larger frame. After a short exposure, remove one of these strips and plunge into the solution of yellow prussiate of potash. If at the end of about a minute the paper is perfectly yellow, and the lines clearly marked in blue, the exposure is correct. If, however, the lines show faintly and broken, it indicates over-printing and the print is poor.

When by means of these strips it is found that the correct exposure has been made, take it to the darkroom, remove from the printing frame, and turn up the edges, so that the print will form a tray of itself, preventing the solutions from getting on the back of the print and making blue specks, when floated on the solutions.

In the darkroom should be three trays. The one in the center can be of zinc, and is placed under the faucet, on which is a rubber tubing with sprinkler nozzle. The tray on the right should be of rubber or lead, containing a solution of yellow prussiate of potash, more or less concentrated, weighing 4 to 8 degrees by Baumé's aréomètre. This developing bath can be used until it is entirely exhausted; and if a deposit forms in it, it will be necessary to decant it only three or four times a year, depending on how much it is used. It is not at all dangerous to the health. The tray on the left contains the clearing solution, consisting of 3 parts sulphuric acid to 100 parts of water. This tray should be of rubber or lead. It is necessary that in each tray, especially the one containing the yellow prussiate, there should be enough solution that the print when placed in it will not touch the bottom, as such would surely produce blue specks.

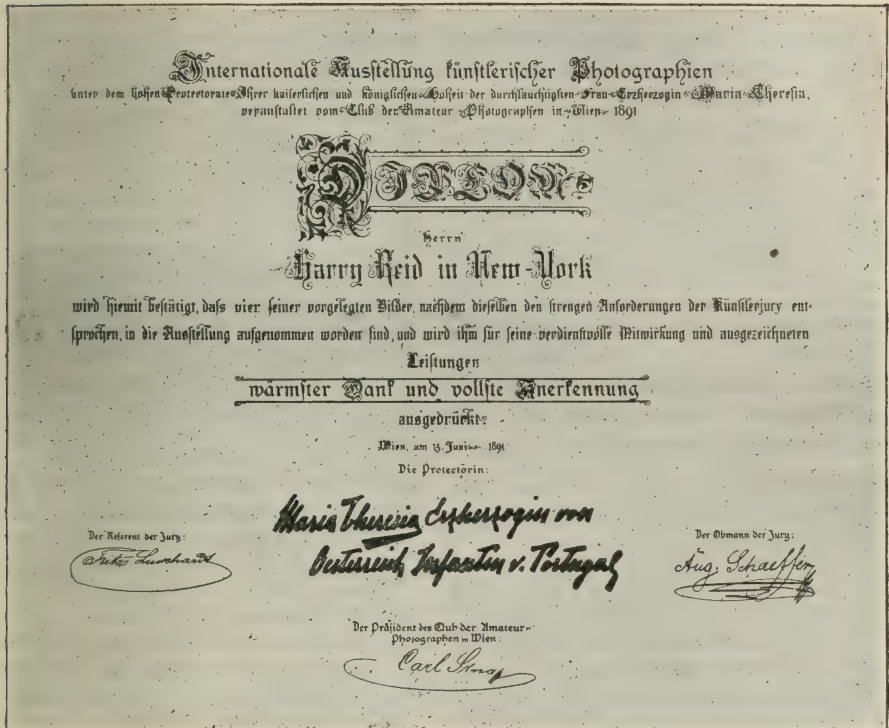
The printed paper is now floated on the prussiate solution (the edges having been turned up to prevent the solution getting on the back of the paper), and care taken that no bubbles of air are left, by passing the ends of the fingers lightly over the back, chasing away any air that may have been confined. Then remove the print quickly and hold it up to let it drain. The design will be seen clearly reproduced in strong, rich violet on a yellowish green background. Hold it suspended for awhile, that the drawing may strengthen; if the exposure has been hardly enough, it is unnecessary to suspend it a long time, as then the background would become specked with blue. If the exposure has been correct, you can let it strengthen well, as the final prints will be finer and the design much richer. When it has been sufficiently developed, stop the action by washing it in water in the center tray, soaking it well on both sides, and then place it in the clearing solution in the tray on the left hand. It changes as follows: the design becomes a rich, insoluble prussian blue, and the background changes from a pale blue, by throwing the acid water over it with a wooden spatula, in a minute or less. Let the print remain in this solution three or four minutes, to completely bleach the background; then place it in the center tray and wash it

well with water, using the sprinkler to remove the last traces of blue that might be found in the background. Leave it in running water for awhile to effectually remove the acid solution, hang it up to dry and the print is finished. There is a mode of obtaining a black design in place of blue, by adding India ink to the gum solution and then proceeding exactly the same as given for the blue prints. Prints thus obtained can be washed, tinted, colored or painted, *i. e.*, can receive the conventional colors.

Yours truly,

ABE LIZZARD.

FAC-SIMILE OF DIPLOMA OF THE VIENNA INTERNATIONAL EXHIBITION OF PHOTOGRAPHY.



THE above diploma was awarded to three members of the New York Camera Club—Miss Mary E. Martin, and Messrs. Harry B. Reid, and James L. Breese.

OUR ILLUSTRATION.

THE handsome silver print that serves as illustration to this issue of the BULLETIN is from a negative made by Mr. Geo. H. Bonnell, of Great Falls, Montana. The name given at the lower left hand corner of the mount, is Geo. B. Bonnell, which is incorrect. The scene represented is one of a handsome series from which we made our illustrations, and every one of them is interesting. Any one that loves Western scenery, should get some of these beautiful views from Mr. Bonnell, and we are glad to be able to illustrate our journal with such fine examples of photography.

E. & H. T. ANTHONY & CO., Publishers.

In accordance with resolutions adopted

August 4, 1891, the Executive Committee met and made the following

RULES TO GOVERN ANNUAL PRIZE PRINT CONTEST.

Rule 1.—Any active member in good standing may enter any kind of photographic print in this contest.

Rule 2.—The print must be the actual work of the member sending it, and from negative made by himself during the year of the contest only. No prints from negatives made during years previous to this contest will be accepted.

Rule 3.—Each contestant will send in one or more prints mounted to suit his own individual taste, and one unmounted copy of the same.

Rule 4.—Contestants will put no names of any kind on their prints, but fill out carefully the blanks provided for the purpose.

Rule 5.—All prints to be sent to the Executive Committee of Annual Prize Print Contest, addressed to the Club Rooms, Academy of Sciences Building, and must all be sent in before December 1st of each year.

RULES TO GOVERN THE AWARD OF PRIZES AND AWARD COMMITTEE.

Rule 1.—The Judges of award will meet at such times and places as they may deem advisable.

Rule 2.—They will take charge of and judge all prints sent in, and will not allow them to be inspected by any one whomsoever, and will keep their own counsel regarding them.

Rule 3.—The envelopes containing names and titles are to be kept with the prints and not to be opened till day of award.

Rule 4.—The Judges will decide the merits of the prints by the following points: Originality, 30; Artistic Beauty, 40; Mechanical Perfection, 30; total, 100 points. The print winning the greatest number of points will take the first prize.

SOCIETY OF AMATEUR PHOTOGRAPHERS.

ON May 10th, Professor C. F. Chandler delivered a lecture before the Society on "Photo-mechanical Processes." It is impossible to give in words any adequate idea of this interesting discourse without the means of reproducing the fine collection of pictures with which it was illustrated. Professor Chandler's collection of type illustrations of

the various processes is unrivaled, and should be seen to be appreciated. The processes discussed were:

- I. Those in which the picture is moulded in gelatine colored by a pigment.
 1. Woodburytype or photoglyph.
- II. Those in which the picture is printed in printing ink.
 - A. Collotype processes (Lichtdruck, Photo-type), in which the picture is printed from a gelatine surface.
 1. Albortype.
 2. Artotype.
 3. Indotint or Autoglyph.
 4. Heliotype.
 5. Leimtype.
 - B. Processes in which the picture is printed from stone.
 1. Photo-lithograph.
 2. Photo-caustic.
 3. Ink photo.
 - C. Processes in which the picture is printed from a metallic relief surface: "typographic or block printing."
 - a. Swelled gelatine processes.
 1. Photo-electrotype (copper).
 2. Photo-engraving (type metal).
 - b. Photo-etchings.
 1. Photo-zincograph (by transfer).
 2. Zincotype (direct photo on plate with albumen or bitumen).
 3. Typogravure (copper).
 4. Chromo-typogravure (several plates).
 - D. Processes in which the picture is printed from an intaglio copper plate.
 1. Photo-gravure.
 2. Photo-aquatint.
 3. Goupil-gravure.

LYNN CAMERA CLUB.

OUTING TO CLINTON AND VICINITY, MAY 17TH.

A DAY among a thousand greeted the delegation from the Lynn Camera Club as they alighted at quiet little Bolton station, nestling amid the scrub oaks and the loftier pines of the west slope of a buttress of Wattognottoc.

Upon alighting, President Drew put his ear to the ground and, as he listened, noted that the cows stopped eating grass, the woodchucks hustled into their holes, the mud turtles and frogs slid off into the water, and everything animate got under cover as quickly as possible; they knew the camera fiends had made a landing. This did not disturb the ambition of the camera party in the least.

The verdant hues of a May morning were at their freshest, and old Wachusett, a monitor upon the western horizon, smiled a lofty welcome.

Soon the commodious barges were announced to be in sight, winding up the long grade of Elbow Hill, and a minute later the four stout bays swung into position in front of the quiet little building with its noisy crew of view-seekers, each with ominous black box or spider-legged canvas-wrapped parcel, big with "dark" purposes.

The Lynn picture seekers were cordially welcomed by a party of six from Clinton, who had not lost, from familiarity, a due appreciation of the beauties of the model factory town of New England.

A lively trill from the bugle, and away for the hills, the four leaders stretching away in lordly style under the firm guidance of the efficient conductor of the trip, W. F. Howard, of Howard Bros., of Clinton, followed by the black wagonette with its spirited pair, bearing the weight of brain, culture and skill of the scientific pleasure hunters of Lynn.

The first point of attack was a beautiful pasture lying upon the Eli Sawyer estate, just within the limits of the town of Clinton, lofty of altitude, commanding a view of the distant mountains of lower New Hampshire and abounding with interesting traces of the glacial period.

The features of this spot, its framing of pine-studded, rock-strewn hillside, the soft, low reaches of green meadow, the gentle slope, white with apple bloom, the rich tints of the pasture shrubbery and the bold features of its geologic structure, were eagerly transferred to the plates and films of twenty-one cameras or absorbed by the "hunger of a lowland eye."

Noticeable among the rock pictures was a large boulder of quartz balanced upon the ledge-paved slope of the hill, the latter falling away at an angle of thirty degrees, which appeared to await only a push from the hand to send it toppling over, to roll crashing down to the meadow below.

Lower in the valley stretches a single isolated table of rock of many tons' weight, lying like a huge, gray pillow of slaty blue granite, smooth as a whetstone.

But the big boulder was the object of universal attention and wonder. Upon a slight eminence it rests, with a bit of ledge nicely smoothed for its resting place, and nothing near to detract from its simple grandeur. Irregularly pear shaped, its height is

20 feet, and its girth at the largest part about 50.

The sight of a rustic plow drawn by a sturdy bay, excited the ardor of the group cranks. The stalwart figure of the venerable President of the Horticultural Society lent itself to the finish of the group, recalling at once memories of by-gone days, and furnishing with his firm grasp upon the handles and energetic pose, just the picture of vigor and poetry needed to harmonize with such rustic surroundings.

One inclined to renew childhood's experiences, climbed gracefully and airily into a clay-encrusted farm wagon, and sweetly beamed upon her gallant swain while he secured an unfading image of this, his own special view.

Stories of the locality were listened to from the lips of the genial proprietor of this lovely farm land, among others of a lofty pinnacle of rock which towered 70 years ago, a gigantic sentinel at the rocky gateway, but which, at the whim of an addle-pated enthusiast, was blown from its eminence, and now lies moss-grown and low, with the drill marks still upon it.

When erect it towered 40 feet above the level of the cart road.

A tempting branch of pink apple blows fell an easy prey to the long arm of a reckless rambler, who stepped down from his perch on the wall with the sigh of satisfaction that betokens a coveted prize well won.

The bugle sounded, the steeds strained at the tugs, and the merry load rolled along over the slope of the Chase road, past the "Acre," with Clinton dotting the opposite hill, the deep chasm of the Nashua just below, and the picturesque mass of the Lancaster mills, glowing a dull red, through the oaks at the roadside.

Upon the summit of Wilson hill the next stop was made, the view of the upper valley of the Nashua offering a tempting chance for the lens. To the south the blue waters wound along until the wooded shores of the "Ox-bow" hid them from view; while looking down stream one saw the wide pool of the mill-pond, the clustered houses of the East Village climbing and crowning the slopes of "California" ledge, with the low brow of Cedar hill in the distance.

One skilled in cliff scaling wandered in search of animal studies, securing a view of a cow of startled aspect, and a family group of goats.

Loaded again, down the long slope of Boylston street and into the town of Clinton,

rolled the party, the bugle waking the echoes, and joke, laughter and song enlivening the way.

The hospitable doors of Cedar Bluff, the home of Charles F. Swinscoe, of the Clinton Wire Cloth Company, were opened wide to the eager tourists, and the matchless view of Wachusett and the long slope of Redstone Hill with the ever-present river in the fore were added to the already abundant collection.

From here the route lay to the famous Chase ledge, patient under the hackneyed cognomen of "The Lover's Leap," this point furnishing a most startling example of the diversified nature of Clinton scenery. Falling away in a sheer drop of 200 feet to the calm brown deeps of the river below, with the red brown mass of the Lancaster mills nestling among the trees of the valley, the edge is to be approached only by those of clear head and steady nerve.

But hunger had invaded the company. One of formidable mien, but a Magazine of witty importance to a party like the present, was observed to be in a fainting condition. Gastric convulsions were feared and the bugle was passed to him to furnish mental occupation and reduction of gases, which should for the time allay the clamorings of outraged nature.

Like children of a smaller growth, noise proved to be a soother of pain, and the crisis was safely passed when the cortège drew up at the open doors of the Breed estate, where bananas, garnished with the fruit of the extensive hot-houses of this well-known establishment, restored mental equilibrium to the toppling reason, and fullness to the hollow stomach.

Stomach? Yes, stomachs; for we were all hungry; the mountain air had done its work.

"I felt that banana strike," said one. "That's true," said another, "for I heard it."

From Burditt Hill, with its superb outlook, to the distant slopes of the Lerling hills, furnished a ride through woodland, field and vale that will be rich in pleasant memories. The scent of the pines, the odors of farm and forest and the fresh sights and sounds of spring time were novel and refreshing.

At the junction of roads from Boylston and Lancaster stands the venerable homestead, now somewhat gone to decay, known as the Major Hastings farm. Shaded with noble elms, its surroundings of orchard and mowing are a fitting and appropriate setting for the old brick walls, the low, long-reaching

barns and tumble-down outbuildings. Just beyond the shaded orchards to the rear, the blue waters of the beautiful East Washacum glisten in the sunlight.

While the party were busy with elms and apple trees, the Magazine wandered. Not mentally, the cravings of nature having been heeded, but actually.

Over the cool moving mowing he strolled to the rear of the house, and found his way, strange to relate, to the shores of the lapping water beyond.

An object of just suspicion, his movements were watched with catlike intentness by a small boy, duly appointed sentinel, who opened, in turn, every door of the old house, to the rear, uncertain as to the intentions of the strange creature with the instrument like a mongrel theodolite.

Rejoining the party, the wanderer announced that he had discovered a lake, a feature which had been pointed to the eyes of the rest of the load the while he was busy with crackers and cookies.

From the hill beyond Lake Side Farm the lake appears spread like a sheet of burnished steel, the horizon is dim with the blue haze of distance, and the rich green carpet of the foreground offers an agreeable contrast to the tossing blue waters spread below. Wachusett here looms in the west, barely eight miles away, the house upon the wooded summit showing clear and sharp against the crystal sky.

Up a hill, which is a hill indeed, beyond the beautiful residence of the Buttericks of fashion fame, the noble steeds strained and tugged, every fiber called into play. The horizon appears to rise as we ascend, the lake sinks flatter amid its wooded shores. A glimpse of the western lake, its isthmus with its treasures of legend, the ancient home of the Nashuas, the islands, the pretty cottages of the old Sterling camp ground, and the distant hills about Worcester, come into sight one after another, to melt away into the foreground of cultured farm and wooded slope. Kendall farm is in sight.

The horses break into a trot upon the level stretch of the summit, and the team rolls grandly past, turns under the maples and dashes up the wide driveway, just as the genial host bursts from the open doorway, his face aglow with welcome, and a hearty, "I am glad to see you all," from lips whose sincerity there is no mistaking.

The doors are flung wide and the famished crowd file in through the low, old-fashioned

rooms, rich in their wealth of simple old-fashioned furniture, rare china and family heirlooms, to the cool, spacious dining-room, where the table groans with its weight of spicy ginger cakes, bowls of lemonade and pitchers of rich creamy milk.

The Magazine was missed, but being observed at an absorbed inspection of the curiosities upon an antique what-not, it was presumed that a sense of decorum was the motive for restraint. But a moment later, with a solicitous air, he approached the table, where, after expressing the hope that all had been served, he produced a huge glass tumbler, holding a quart and a half, a valued family relic, which he greedily filled with the foaming cream. With pockets distended with ginger cakes, he modestly retired, a pitiable example of the power of matter over mind.

A visit to the wide old chambers with canopied beds and the various relics of old-fashioned farm life, time-tinted portraits and the marvelous corner in the great west room, with its tin scone, the warming pan, an ancient lantern, engrossed the attention of all for half an hour, when the way was led to the barn, where the fine stud of horses were loosed into an enclosure, the allurements of oats and the gentle words of a master-mind readily assisting to give the most attractive of animal groupings. Snap, snap, snap, went the various buttons, doubtless to the mild wonder of the intelligent animals who crowded eagerly to the fence, their handsome faces half hidden by the tossing manes.

Regrettably the party turned to leave the quaint old spot, free with the freedom of the mountain air. With the genial host mounted upon the curvetting "Peculiar," to the sorrow of the squirming daschhund "Judas," who was restrained by the strong hand of a hostler from following, the last stage of the journey was taken up, the inviting roofs of Newhall farm beckoning from the slope farther down.

"Peculiar," well knowing this to be a horse-admiring company, strove to the utmost to show his pretty points, and by his bright, affectionate eye, seemed to realize the importance of the occasion. The remark, "Oh, he knows he is on the market," from his accomplished rider, elicited the most jaded of puns from the Magazine, regarding the price at which he should "mark it." A last trill of the bugle, and the jolly freight swung into the spacious yard of the Newhall farm, to be received and welcomed by the generous hostess, with her able corps of aproned assistants. A bountiful spread it indeed proved to be. Under its stimulus wit flowed like water.

(To be continued.)

THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

A STATED meeting of the Society was held Wednesday evening, May 1st, the *President*, Mr. JOSEPH H. BURROUGHS, in the chair.

The Board of Directors reported the election of several active members.

After the reading of the minutes and the conclusion of the regular routine business, Julius F. Sachse, Esq., read a paper upon "The Chronological Portraiture of Gen. George Washington." In connection with this subject the lecturer exhibited a series of thirty-six portraits of the illustrious subject in platinum, black and sepia, arranged in chronological order, and including every known authentic portrait from life, from Peale's first study at Mt. Vernon in 1772 to that of St. Memin in Philadelphia in 1798, the last ever made from life.

Included in the collection were photographic copies of the mask taken of Washington's face by the celebrated artist, Hondon. Hondon came to this country for the purpose of modeling a statue of Washington, which was to be placed in the Capitol of Virginia, pursuant to a resolution of the General Assembly in June, 1784.

He spent two weeks at Mt. Vernon, in making sketches and careful measurements of Washington's person, and on October 13th of that year he made, in plaster, a mask of the face, from which a cast was made and the well-known bust modeled.

The original life mask remained at Mt. Vernon, and upon the occasion of the removal of the General's body to the present sarcophagus in 1832, it was loaned to Struthers, the Philadelphia marble mason, who made a plaster cast from the mask.

This was presented to the Historical Society of Pennsylvania, and from the cast Mr. Sachse made the three photographic studies which give a clearer conception of the true lineaments of the illustrious original than any other portrait in existence.

The portraits were arranged against the wall in such a manner that the changes wrought by the cares of state and increasing age could be clearly traced, the whole offering an opportunity for a comparative study of Washington portraiture never before presented.

Upon the conclusion of the address it was resolved, upon motion of Mr. Hudson S. Chapman, that a vote of thanks be extended to Mr. J. F. Sachse for his interesting and

valuable paper read before the Society this evening.

Mr. A. E. Maris exhibited a Hetherington magazine hand camera, and explained the mechanism and practical manipulation.

Mr. John Carbutt followed with a "Genie" hand camera. A number of specimen prints made by this camera were also shown.

A collection of lantern slides, made by members of the Waterbury Photographic Society, were to have been shown, as announced, at this meeting, but as they failed to materialize, a number of excellent Mexican views by Mr. William H. Rau were substituted.

Adjourned.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. Correspondents will please remember this. No attention will be paid to anonymous communications.

Q.—S. J. writes: I ask a little information relative to "No Gold" toning solution: Do you heat the bath before putting in the prints? If not, how do you prevent the "Aristo" from curling? About how many cabinets should the two bottles tone? Will the bath keep if bottled? If not, in what respect is it economical?

A.—In cold weather the bath should be heated to about 70 degrees Fahr., otherwise it is unnecessary. The Aristo should be given several baths in hot water before the operation of toning is commenced, and the prints should go into the toning-bath limp and flat. We cannot answer this question exactly, but we should say about five hundred cabinets. The bath will keep indefinitely if tightly bottled. Its reduced cost makes its use more economical than that of gold.

Q.—R. M. writes: 1. Is or has there been, any pencil or device for retouching photograph negatives by electricity. If so, what can be said of it? 2. What effect does chloride of sodium in positive silver bath have on albumen silver prints? 3. What will give the richest black tones to albumen silver prints? 4. Which will give the highest glossy polish to albumen paper, the drag or roller burnisher? 5. What is cocculus indicus.

A.—We have heard of some such device as you mention, but have never seen it, and

it is not on the market yet, but will be soon. We are under the impression that it will prove very satisfactory. Chloride of sodium in the silver bath would precipitate the silver as chloride, and if much were used, would ruin it for sensitizing purposes. The formula published in Vol. 23, No. 9, in answer to D. L. P.'s query, is a good one:

| | |
|------------|------------|
| Gold..... | 3 grains. |
| Water..... | 30 ounces. |

Add a few drops of a saturated solution of carbonate of soda. Print deeply, wash but little before toning, fix and wash in the usual manner. There is but little difference between the two kinds of burnishers, but we are inclined to think that the drag variety has a little advantage in the particular you mention. Cocculus Indicus is the name given to a poisonous seed, brought from the East Indies. It is used in medicine, and, illegally, in the preparation of malt liquors. It possesses acrid and intoxicating qualities. Its chief active principle has been called Picrotoxine. It is the seed of the Anamirta Cocculus, a beautiful climbing plant of the natural order Menispermaceae.

Q.—F. W. H writes: In your issue of March 26th you give a table of the varying actinic powers of the sun for the months of the year. This is very interesting and would be valuable if true yet, according to it, between eleven and one o'clock in January a view will require fourteen times the exposure necessary in June or July at same time of day!! I assume that the calculations are made for Eastern climates, and yet it seems incredible and contrary to experience altogether. It certainly is untrue regarding Colorado and California climates. Looking over my records I find many views taken in these States from December to May, giving on bright days the same exposure in the former case as the latter and with good results; whereas, according to your table I should have given at least ten times as long an exposure in December and January as in May. I also took many instantaneous views of surf and shore at Santa Barbara, latter part of January and early in February of this year, taking in rocks and cliffs more or less in shadow, using Seeds 26 with $f/22$ stop, and Seeds 23 with $f/16$. Prosch shutter, "slow" instantaneous, and also "quick" (with spring). According to your tables this would be impossible. I would be glad to know what is wrong with your tables; can it be the actinometer? Are your figures given for bright days each month of the year?

I would also be glad to hear the experience of other photographers.

A.—The tables to which you refer, gave the correct relative intensity of the sun's rays for the different times of year in places of approximately the same latitude as New York. You have failed in your deductions to take into consideration the very important item of reflection. At any time of the year it is possible to take, on a bright clear day, an instantaneous picture on the water, when such a picture would be an absolute impossibility on the land at the same time, and yet the sun's actual lighting power would be exactly the same. The same view taken under the same conditions in different months during the year would require, if within the limits of latitude named, a varying exposure such as shown in the tables you mention. Santa Barbara and Southern California are too near the tropics to have these ratios hold good.

Views Caught with the Drop Shutter.

Two itinerant photographers of Brenham, Texas, have been enjoying themselves by a cut-rate war. In the language of the local paper, "the price of a dozen cabinets is more uncertain than that of a pound of cotton. Practice of this kind is neither elevating nor beneficial to the profession, and results in benefit to no one; depreciation in the quality of the work done being almost sure to follow.

THE FOSS ETCHING AND PHOTO COMPANY, is the name given to a newly incorporated company in Chicago, whose incorporators

are Gayton A. Douglass, Francis W. Walker and Fred. D. Foss. Capital stock, \$50,000.

WE acknowledge with pleasure the receipt of the new catalogue of photographic apparatus of J. C. Livernois, of Quebec. Its one hundred pages are well and profusely illustrated, and in them we note many of the novelties manufactured by our publishers.

WE take this occasion to heartily congratulate our good friend, General H. Q. SARGENT, of Cleveland, on his election to the position of school director. It is an honorable position which we feel certain he will fill ably and well. We are glad to note such men in the profession.

THE WELFLEY photographic studio of Somerset, Pa., has lately been taken charge of by Mr. A. A. ROGERS, and we wish him all the success possible in his new venture.

Miss BLANCHE LENZI, the daughter of photographer GEORGE LENZI, of Morristown, Pa., had a narrow escape from being run over while out bicycling the other day. While endeavoring to pass between two vehicles she fell and was somewhat severely kicked by the horse of one of the teams. She was quickly assisted to her feet by some of the bystanders, and shortly afterward recovered, none the worse for her experience save by a few bruises.

WE are informed that the STUBER DRY PLATE COMPANY, of Louisville, Ky., have completed their factory and are ready to meet all trade demands. Every success attend them.

TABLE OF CONTENTS.

| | PAGE | | PAGE |
|---|------|--|------|
| ABOUT LICHTDRUCK, by <i>Adolf Beyersdorff</i> | 332 | LETTER FROM GERMANY, by <i>Dr. H. W. Vogel</i> | 325 |
| A HINT FOR SUMMER WORK, by <i>Mary Scott Boyd</i> | 335 | LYNN CAMERA CLUB..... | 347 |
| CALIFORNIA CAMERA CLUB..... | 346 | OUR ILLUSTRATION..... | 345 |
| CAMERA CLUB PHOTOGRAPHIC CONFERENCE, by <i>Capt. W. DeW. Abney</i> | 336 | PHOTOGRAPHY AND MEDICAL SCIENCE.. | 321 |
| EDITORIAL NOTES..... | 323 | POSITIVES IN BLUE (CYANOTYPES)..... | 342 |
| ENGLISH NOTES, by our <i>Special Correspondent</i> | 330 | SOCIETY OF AMATEUR PHOTOGRAPHERS. | 347 |
| FACSIMILE OF DIPLOMA OF THE VIENNA INTERNATIONAL EXHIBITION OF PHOTOGRAPHY..... | 345 | THE NEWARK CAMERA CLUB..... | 346 |
| | | THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA..... | 350 |
| | | VIEWS CAUGHT WITH THE DROP SHUTTER..... | 352 |
| | | WHAT OUR FRIENDS WOULD LIKE TO KNOW..... | 351 |



"MAKE HAY WHILE THE SUN SHINES"

ANTHONY'S

Photographic Bulletin.

EDITORS :

PROF. CHARLES F. CHANDLER, PH.D., LL.D.

PROF. ARTHUR H. ELLIOTT, PH.D., F.C.S.

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MARINE PHOTOGRAPHY.

Too little attention is, we think, given to marine photography. True, we have seen many dismal failures; black hulls sailing on a mingled sky and ocean of such dazzling brightness, that sails, masts and ropes were but theoretical and paltry accessories, faintly suggested by certain dim and ghost-like outlines.

On the other hand, views of such entrancing beauty and clearness have been submitted to us, showing the results of proper care in composition and lighting, as to make it a matter of wonder how such dismal failures as those first referred to could have been produced when all necessary materials for such perfect pictures were at hand.

It is with the view of giving some fundamental principles necessary to success in this direction that this article has been written.

A hand camera is, of course, well nigh indispensable for this sort of work, both for the sake of portability and by reason of the fact that instantaneous exposures are here the almost invariable rule.

As to lens, nothing to our mind can exceed an ordinary single view lens, focused for a distance of, say, fifty feet. In this way an extended sea view, even while including a generous foreground, will not be lost in mistiness on the horizon; and an effect similar to the indistinctness of a portrait background will be avoided.

For yacht views, pure and simple, a wide angle lens is preferred by many, depth of focus being in this case secondary to crispness of definition in the center of the field. A rather large stop with excessive speed of shutter will be found to give, perhaps, the best results; as, in a brisk breeze running free, the velocity attained by one of the crack yachts is by no means something to be despised or overlooked. Couple this with the fact that, in many cases, the standpoint of the operator, often a naphtha launch, is violently pitching as well

as moving ahead at the rate of 10 miles an hour, and it will readily be seen that quickness of exposure is everything.

By all means use a shutter with a pneumatic release. It is almost always necessary to make the exposure on the instant, or the chance is lost.

A quick, sudden pressure on the button is almost certain to seriously jar the camera, while a vigorous and impulsive squeeze on the bulb is free from any disastrous effect.

Brace yourself securely against the gunwale of the boat if it is high enough, and you will often avoid an ignominious tumble, broken camera and a magnificent expanse of cloudless sky on the plate where you vainly hoped to see bulging canvass, straining ropes and prow half buried in foam from that big billow which was the cause of your own downfall.

The objection may be made that an enthusiast is needed for this kind of work together with a camera endowed with qualities nearly approaching those of mackintosh. Even granting this, we say that such a combination is easily to be found, and, when working in unison, it will produce a collection of views in which gracefulness and vigor of action are combined in a manner impossible with any other class of subject.

The lens should, if possible, be shielded completely by the shutter; this will prevent the spray from injuring, for the time being, its picture-making qualities.

Avoid bright metal-work on your camera, lens or shutter. Have all blackened and as little of it as possible, to avoid the corrosive action of the sea water. A hard-rubber shutter is best as it is less liable to stick when wet than any other kind.

Of course, we have chiefly depicted a rough-weather experience, knowing that the trouble and wetting will be amply compensated for by the results: these to our mind being far in advance of any mirror effects so far as yachts are concerned. Not that we wish to be understood as decrying the merits of the beautiful reflection work so often seen; but something full of vigor and snap, showing Neptune in his wilder moods, is preferable to a tranquility, which, while beautiful and suggestive of the fabled lands of the lotos eaters, is more suitable to a landscape than a sea view.

A roll of film is preferable to anything else in this case. Often you will pass a yacht and then another in quick succession, too quick to change your plate holders, which perhaps are wet and the slides stick. Or you want two views, one approaching, and the other receding. With plate holders you can, of course, get the first, but by the time you are ready for the second it is just tantalizingly out of reach. Besides, the illumination is almost always intense and many a fogged plate will result from a hurried and careless withdrawal or replacement of the slide.

The lighting in a marine view is all important. Remember that the sky in your picture will be a dazzling white background unless filled with clouds, and a white sunlit sail will not show up against it with anything like the distinctness apparent in looking at it in nature.

Again, the water is a powerful reflector, and, though apparently dark in color, will, under a noontide glare, come up in a developed negative almost, if not quite, as dense as the sky above it.

Have your camera so pointed that the sun is to your right or left at an angle of about 45 degrees. By so doing, ropes, sails and hull will be thrown in partial shadow and insure a contrast in your finished print which would otherwise

be woefully lacking in this respect. Make your exposures in the morning or afternoon rather than at noontime.

Never take a beam view of a vessel with her sails trimmed flat as boards; there will be neither life nor action in it, and the mass of white, if brightly illuminated, will be scarcely distinguishable against the high lights of the sky and water background.

Even with a cloudy sky and but little direct sunlight there will be enough reflection for a quick exposure, and a full light on sails and hull will then give both contrast and detail. Under any other conditions it is better to have the sails in shadow or, at most, but partly lighted.

Almost any good developer will serve for marine exposures, but it should not be used full strength, as with nap shots on land; otherwise plenty of detail, but insufficient density will result. Develop slowly and with rather dilute solution to start with. Hydroquinone is especially adapted for use here as the image comes up slowly and with plenty of density.

Beware of over rather than under exposure, as it is hardly possible to fully realize the immense amount of added light due to reflection in a seascape. It is usually possible to make a satisfactory instantaneous exposure even on an overcast day on the water, and many prefer for development the iron and oxalate solutions so largely used on the continent of Europe.

Pretty moonlight effects can be obtained by having the light shining directly in the camera, making a short exposure, and developing for density. In this case a film is again preferable to a plate owing to the freedom from halation in the negative produced.

We have made no mention of surf or combined shore and sea photography up to the present, but properly handled these subjects are capable of producing grand results.

Bold masses of rock in the foreground, over which huge swells are breaking, can be made most effective use of. Have the rocks, if possible, in shadow, and the sun at a right angle or rather more to the direction in which the camera points. The crest of the waves will then reflect the light, while the reflection from the main body of the water will be avoided and the true effect of the dark billow breaking into white foam along its crest will be obtained.

The extreme dampness and corrosive properties of the atmosphere at the sea shore must be taken into careful consideration. The metal parts of the camera will rust and stick if not carefully watched. If plates are used, unusual care must be taken not to touch the sensitive surface, as finger marks will surely result. This applies to films as well.

Have hard-rubber slides to your plate holders if you would avoid sticking and jamming and the consequent loss of many a picture. Your woodwork is liable to stick, and tight fits become impossible ones when exposed to long-continued dampness.

But with all this appalling list of drawbacks, the enjoyment of one good yacht race, and the collection of negatives that care to the details of lighting and exposure will give you, will far more than make up for the incidental wettings and mishaps that may fall to your share.

All communications for the columns of the BULLETIN should reach us on Monday preceding the day of issue, to insure their publication at that time.

EDITORIAL NOTES.

THE Minneapolis Camera Club have filed Articles of Incorporation and are now in active existence.

THE Annual Outing of the Cincinnati Camera Club, which occurred on Decoration Day, was a great success in all ways and much enjoyed by those who participated.

MR. SIMON KRUG, of Cincinnati, an old-time photographer of that city, celebrated his fiftieth birthday anniversary on the 1st inst. in a manner very unexpected to him. His friends, in fact, took the matter in hand and celebrated it for him, leaving with him a valuable mark of their esteem. The occasion was a complete surprise to Mr. Krug and one which will long be remembered with pleasure.

A STRONG objection has lately appeared in an English journal to the increasing tendency toward using gaudy and unduly decorated (?) mounts for photographs, with the statement that the bronze powder used in their printing is very apt to be distributed more or less over the surface of the mount and that unless very thoroughly removed before the print is mounted, spots and blemishes are sure to result from it. A strong plea is made for the use of plain ink of the various fine colors obtainable instead of bronze powders for this purpose.

MR. O. C. YOCUM, who is making a very extensive collection of negatives of natural scenery for the World's Fair, has just returned from a tour in Oregon and Washington, and will shortly go to Alaska. There will be shown at the Fair about 2,500 pictures of Washington and Oregon scenery alone.

A NEW and ingenious contrivance has lately been put in the field by an English house for making ferrotypes on dry plates, the whole apparatus occupying less than a cubic foot and the entire operation of exposure, development and fixing being performed without touching the plate; the plate is exposed by pressure of a spring, and is then dropped automatically into a tank in which the developer is forced from a rubber ball; the washing water and fixing solutions follow from their own receptacles, and a dipper takes the finished print from the tank and delivers it to the operator.

QUITE a party of Boston gentlemen, among whose names we notice those of Messrs. S. R. Payson and Theodore B. Starr, have lately been doing a tour through a portion of Maine with their cameras and sketch books, and if they obtained even one-half their fair share of the beautiful and wildly picturesque views to be found in the old pine tree State, they must have come home with portfolios well filled and plate boxes bursting with gems.

AN English publishing house is about to put upon the market, in parts, a photographic process fac-simile of the famous and valuable folio edition of Shakespeare published under date of 1623. All the errors, typographical and otherwise, appearing in the original edition will be duplicated in the reproduction; advance proofs of the work are said to be very fine in their likeness to the

original. The original from which the copy is being made, is said to be worth £1,000 sterling.

THE Providence Camera Club, reinforced by representatives from the Mystic, Lynn, Boston, Portland, Springfield, Hartford, Waterbury and New Britain Clubs, have planned for an excursion down Narragansett Bay on the 17th inst., Bunker Hill Day, and a clam bake to follow. We sincerely hope, in the interests of photography, that the work of the day may be well over before dinner, as all who have ever experienced the genuine delight of a Rhode Island Clam Bake will bear witness that little work need be expected from the happy victims for some hours after. We shall look for a report of this excursion with much interest before our next issue.

WE would acknowledge, with thanks, receipt of a number of specimens of portrait work and groups from Mr. J. N. Laprés, of Montreal, Canada, which show points of great excellence. Careful attention to detail in the matter of posing and drapery is noticeable, and the technical quality of the prints is very good indeed.

THE excellent example set by Mrs. Draper in her endowment of Harvard College has been ably followed by the widow of Professor Adams, who has offered to endow Cambridge Observatory with a sum sufficient to produce an annual income of £300 for the establishment of a chair to be called the "John Couch Adams Astronomer."

A QUITE novel and dangerous piece of photographic work has recently been accomplished by Miss Frances Johnston, of Washington, in the photographing by flash light, and very successfully too, of many of the Pennsylvania collieries; the element of danger ever present there, being fire-damp. Her measure of success is said to have been full, considering the many difficulties under which she labored. Several attempts were also made to obtain views in the Mammoth Cave, Kentucky, but, owing to its immensity, were finally given up.

ON Decoration Day the Eighth Annual outing of the Hartford Camera Club, with guests from numerous neighboring cities, was enjoyed, the number participating amounting to about 100 persons. The day was delightful and one of great pleasure and profit to all.

THE Pittsfield Camera Club gave their first outing on the 1st inst., which was attended by 15 members, and some fine negatives obtained. A number of other outings are arranged for the summer, and the prospects are good for a large increase in club membership before the fall meetings.

THE California Camera Club, with its usual progressive spirit and enterprise, gave a most delightful evening's entertainment in the latter part of May, on which occasion was a lecture and large set of views, some made specially for the occasion by Professor E. E. Barnard, of Lick Observatory. The lecture, besides being most entertaining, was instructive to the highest degree, and hugely enjoyed by the very large audience present.

THE first outing of the Newark Camera Club was indulged in on Decoration Day, as was also that of the Orange Club. Both clubs had a large attendance and a good time. The Irvington Club went on the same day to Montclair; they have recently leased rooms, and will proceed at once to fit them up.

BICHROMATED paste is recommended as being the best for binding the two glasses of a transparency slide together, as, after it is finished and dried in the sun for a day, it is completely insoluble. The paste is made by rubbing to a smooth paste, without lumps, two teaspoonfuls of flour in 4 ounces of water, placed over a slow fire and stirred till it boils. Five grains bichromate of potash are then slowly added and stirred constantly, after which it is allowed to cool. This paste must be kept in the dark, as otherwise the action of the sunlight on the bichromate will harden it beyond use.

A NOVEL advertising scheme has been put in operation by the members of a foreign photographic society, who make and loan to other clubs collections of slides representing the staple industries and manufactories of their region, together with an explanatory lecture thereon.

WE learn that Mr. William Jassen, of Brooklyn, has just experienced a severe accident from the premature discharge of a flash-light compound, with which he was about to make an exposure. This must serve as another warning not to toy with dangerous mixtures of magnesium and chlorate of potash, etc. They are dangerous in the extreme.

LETTER FROM FRANCE.

By M. LÉON VIDAL, Editor, *Le Moniteur de la Photographie*.

International Exposition of Photography.—New Results Obtained by Mr. Lippmann—Session of the French Photographic Societies.—Polychrome Projections.—Panoramic Projections.—Exposition of the “Cercle de la Librairie.”—The Peligot and Janssen Medals.—“Figaro-Photographie.”

THE International Exposition at the *Champs du Mars* has brought together quite a large number of exhibitors, notwithstanding that its organization has been too close to that of 1889. In reality, it does not offer any attraction due to novelties. Its principal object is commercial. Evidently, its promoters are making great efforts to draw a large number of visitors. This is their duty and their right. But sometimes it happens that zeal is carried to an excess which leads to promises being made that are never carried out. There are expenses involved, of no small amount, and not only are they to be met, but some profit must remain. Besides, the promoters of this class of exhibitions do not run the risk of losing any money on them without endeavoring to make as much from it as they can.

That is why we are rather skeptical as to the pretended establishment of a college course in photography with the benefits to be derived from this Fair. Thus, they want to appear as giving it a useful object which it will be unable to attain. It really does not seem likely that the promoter will give the profit, if there be any, over to a work of public good.

It would be useless to give an account of what is to be seen in those galleries

where there are, as in every exhibition, some very fine photographs, some fair, and some bad ones.

Mr. Lippmann has his discovery and his recent labors represented by several specimens. This is at the present moment the most interesting thing to be mentioned. Progress is shown, since, from the simple spectral colors, the reproduction of compound colors has been reached.

We have seen the results of these experiments, which were first shown to us by Mr. Lippmann himself in his laboratory at Sorbonne, and afterward projected at one of the public sessions organized on the occasion of the Congress of French photographic societies.

The inspection of these specimens, which are yet rudimentary, furnishes evidence of a real step forward. The objects reproduced, which are : a parrot, some flags, a colored glass window, and a plate with oranges, do not reflect but compound colors, and it is already a great deal to find on the plate the design, the modeling and the colors almost exact of the originals. The white of the French flag is produced well enough to give the right impression, and considering that white is the most complex of the compound colors, such a complicated reproduction constitutes therefore a success which is important to note.

It does not seem to be doubtful that more progress will follow such as has been achieved. Mr. Lippmann thinks it is necessary, above all, to perfect the orthochromatic qualities of his plates and to increase their sensitiveness.

Since there is nothing more to perfect, the scientific principle having been demonstrated, it can be affirmed that there exists a physical method for the direct reproduction of colors.

Certainly, a great deal has to be yet done before this process becomes of such easy application as to be useful artistically, scientifically and commercially ; but this great deal will be accomplished, and it will happen with colors, perhaps sooner than it is thought, as it has been with sound and the voice, by means of the telephone and the phonograph, that they will be registered and transmitted.

There, too, we meet with very complicated simultaneous phenomena. At the outset it appeared very difficult to arrive, through the confusion of all sorts of vibrations, to a resultant similar to direct hearing ; but now we have it demonstrated that the combination of the most complex vibrations reaches the ear as clearly as if it heard the sound emanating from their direct source. Thus it will be with colors. And the astonishing demonstrations given by Mr. Lippmann lead to a certainty of results similar to those obtained with sound, no matter how complex may be the action of the luminous waves.

There is at present in Paris an assembly of French photographic societies having been brought together for the purpose of establishing a National Union of said societies with the object of corresponding with the International Union of Photographic Societies of the whole world. It is a vast project of which we fail to see the practical object. Certainly, unions can do no harm ; but what we do not see clearly is the usefulness of such inter-association, of a federation which will add nothing to individual efforts and labors, and in which there will be, as in a great many organizations of that sort, some chieftains who know how to wield the force there is in numbers, and herds of lambs which are always very useful in furthering certain ambitions.

However, we wish all success to the undertaking from which some good may be derived.

• Some public sessions and some excursions were organized in connection with said assembly. On Monday, May 16th, a soirée-conference was held at the large Hall of the National Conservatory of Arts and Trades, during which four distinguished persons were introduced, namely, Commander Möessard, who exhibited amidst much applause his beautiful panoramic projections; M. Bergeret, M. Lippmann's assistant, who projected the specimens referred to above; M. Léon Vidal, who spoke on the subject of polychromatic projections, and exhibited a series of slides which were also much applauded, and M. Moltein repeated the experiments made by M. Almeida on stereoscopic projections through colored glasses and seen through glasses of the same colors. Other soirées of the same kind will be given.

We hope that a vote will be cast by the Assembly, on our motion in favor of the establishment of a course on the Theory and Practice of Photography in the National Conservatory before mentioned, paid by the State.

The April number of "Paris-Photograph," edited by our friend, M. Nadar, contains some collographic plates in support of a demonstration, relating to polychromatic projections. These plates, specially that in which the image is compound, are very difficult to print so clean and clear. This work does great credit to M. Bergeret who has superintended its execution.

As we mention this sort of projections, we had better explain them.

These are experiments similar to those made by Mr. Ives, of Philadelphia.

We work on the principle, as to the entirety of the operation, put forth in 1869, by Messrs. C. Cros and Louis Ducos-du-Hanron, and the results are very interesting.

Our method in detail differs from that of Mr. Ives in that we take the three negatives successively on the three plates sensitized differently to the color radiations, instead of using one plate sensitive to all radiations on which a triple impression is taken simultaneously.

We do not pretend to do better than Mr. Ives, the results of whose experiments unfortunately we have been unable to see. He is at present in London, where we would have gone with pleasure to attend his lectures, were it not that our many occupations have imperatively retained us in Paris these days.

We do not, therefore, either compare or criticise. Mr. Ives has, over us, the advantage of a few years' lead, which has allowed him to experiment longer.

The special apparatus being made for us is not yet ready, so, that, for the time being we can only avail ourselves of materials that are not appropriate to those applications. They are sufficient, however, to allow us to make the demonstration of the synthesis of colors by means of the selection effected by plates, diversely sensitized to the different rays of the spectrum.

Some of the subjects we have thus projected have reproduced the colors of the original very well. Some of these experiments are in request everywhere, and are very much applauded.

When we have the material expressly made for the purpose, we will be better able to combine all the diverse elements that it is necessary to put in perfect harmony, so as to obtain a result as perfect as possible.

It is needless to say that this invention which we are careful not to call ours, dates back to the learned men before mentioned. They described the experiment in its entirety, and we limit ourselves to the repetition of it, and add to it some means of detail which detract nothing from the rights of priority which date back to 1869.

The Cercle de la Librairie has organized an exposition of processes derived from photography ; that is, of prints obtained by photo-collography, by photo-engraving intaglio and relief, and by photo-lithography.

A competition was organized for the authors of various polychrome and monochrome reproductions, of which the originals were furnished by the Cercle.

Only eight competitors came forward to the call, and their work was not very satisfactory as to polychrome. The idea was a good one ; but it should have been taken up again, adding an international character to the competition.

At the last session of the French Photographic Society, the first Peligot medal was awarded to Mr. Janssen. It was certainly well awarded. Mr. Janssen remarked, with his fine wit and with some reason, that he had reached an age and a degree of popularity and success in which it was incumbent upon him to grant rewards rather than to accept them. On the other hand, he was pleased to create a Janssen medal, and immediately awarded it to Mr. Lippman, saying to him that although it was of silver it became of gold from the mere fact of its being awarded to a man of his worth.

Lastly, the photographic society of Vienna has also given recognition to Lippmann's great discovery, offering to confer upon him a medal through the Paris Photo Society.

The publishers of *Figaro* are preparing a very important illustrated number, which will be issued June 4th, with the title "*Figaro Photographie*."

A competition of proofs was announced for that purpose, and the publisher of *Figaro* has received them from everywhere. The best of them will be published.

There are among them many ancient and modern portraits and suggestions relative to every application of photography. This number will meet with the greatest success. We believe there has been already more than 20,000 copies placed.

PARIS, JUNE, 1892.

THE RAPID HYDROQUINONE DEVELOPER.

By PROF. ALEX. LAINER, *Vienna*.

DR. MIETHE has published in the "*Photographische Nachrichten*" an article about developers, referring to my rapid hydroquinone developer.

As the rapid hydroquinone developers mentioned by me have found many faithful adherents on the continent, it might, perhaps, interest the readers of the BULLETIN to have a more detailed description of the same.

I have worked out four formulas, of which No. 1 is the strongest and No. 4 the slowest in action.

SOLUTION A.*

| INGREDIENTS. | FORMULA. | | | |
|-------------------------------------|----------|-------|-------|-------|
| | I. | II. | III. | IV. |
| Water | 1,000 | 1,000 | 1,000 | 1,000 |
| Sulphite of soda, cryst. | 40 | 30 | 35 | 80 |
| Yellow prussiate of potassium. | 120 | 90 | 25 | 30 |
| Hydroquinone | 10 | 10 | 10 | 12 |

* The several ingredients are dissolved by heat.

SOLUTION B.

| | |
|--------------------------------------|------------|
| Caustic potassa or caustic soda..... | 250 grams. |
| Water | 1000 c.c. |

For use, mix for each 13 x 18 cm. plate :

| | |
|-----------------|-----------|
| Solution A..... | 60 c.c. |
| Solution B..... | 6-12 c.c. |

The softness of the negative will increase in proportion to an increased application of Solution B.

Under normal conditions the development is finished in from one to two minutes. Formula I, however, can give a completely developed negative in forty-five seconds, which, at continued development, shows only increased density and will lead to the formation of fog.

The extraordinary reducing power of this cheap developer is surprising ; the negatives obtained excel by excellent details in the shadows, and are perfectly clear, provided that the emulsion plates are good and that the developer has the temperature of well-water (about 12 degrees C.).

The developer, Formula I, has not been surpassed in rapidity and quality to the present day by any other developer, not even by Rodinal, and I may quote the words of an eminent expert, Dr. Just, who writes about the same in Eder's "Year-Book," 1892 :

"The excellent results which I obtained with this handsome developer on instantaneous views induced me last summer to test the same on bromide of silver emulsion paper."

"Dr. Just writes further : "Lainer's Rapid Hydroquinone Formula No. 1, in concentrated condition, as well as diluted with half or an equal volume of water, is quite an excellent and powerful, if not the most powerful, developer for bromide of silver emulsion paper, provided one is in the position to keep the baths at a temperature of 12 to 14 degrees. Nothing was to be observed of a coloring effect; on the contrary, the whites showed such a brilliancy that pictures developed with oxalate looked yellow when compared with the same."

The developer Formula No. 4 contains the most sulphite of soda, that is 80 grams per 1000 c.c. of water. This developer is not of the same highly energetic action, but it possesses a great durability, and to show its utility I might mention that Captain Ritter von Reisinger developed 21 dozen dry plates with half a liter of my developer without even one of the plates becoming yellow.

Plates which fog with the before-mentioned developer are finely developed by application of bromide of potassium ; the proportionate quantity to be applied is, for instance :

| | |
|---------------------------------------|-----------|
| Solution A..... | 60 c.c. |
| Solution B | 12 " |
| Bromide potassium solution, 1:10..... | 5 to 10 " |

In some cases a simple dilution with well-water will act favorably; for instance :

| | |
|------------------|---------|
| Solution A | 30 c.c. |
| Solution B | 3-5 " |
| Water | 30 " |

There need be no fear that the development is retarded hereby. Exposed plates which, for instance, showed not the slightest trace of a picture with the pyro-soda developer, gave very good negatives, rich in detail, with the rapid

hydroquinone developer. An exposure of one-thirtieth of a second with the relative opening of the objective of $f/30$ gave a fully successful picture in sunlight.

Formula II, besides the proportions for mixture already mentioned, can also be applied with potassa or soda.

| | |
|-----------------------------|---------|
| Formula II A..... | 60 c.c. |
| Potassa solution, 1:2*..... | 10 " |

gives a good negative in two minutes.

| | |
|--------------------------|---------|
| Formula II A..... | 60 c.c. |
| Soda solution, 1:5†..... | 12 " |

gives a clear, not very strong, negative in four minutes.

By addition of a little tincture of iodine 1:100, a strong condensation of the highest lights of the negative is prevented; if to 60 A, Formula II and 10 c.c., caustic potass. 1:4, 2 c.c., tincture of iodine 1:100 are added, the gradation in the high lights is influenced, an increased addition of tincture of iodine leads to total flatness and the fixing proceeds much slower. A small addition of tincture of iodine may be of very good use in some cases.

The developed plates are well washed and then fixed in an acid fixing bath.

I generally immerse the plates after superficial washing, in water containing 1 to 2 c.c. muriatic acid per liter, wash again, and then put them in the acid fixing bath.

The clear, acid fixing bath introduced by the writer, which has a clearing and tanning effect, is produced by adding 50 c.c. acid sulphite solution to a liter fixing bath.

The acid sulphite solution is obtained by dissolving 250 grams neutral crystallized sulphite of soda in 1000 c.c. of water and adding afterwards 50 c.c. concentrated muriatic acid. The acid sulphite solution keeps for a long time in well-corked bottles.‡

The fixing bath can be acidified repeatedly with this acid sulphite solution, but too great an addition should be avoided because the fixing will be retarded. Many kinds of dry plates will fix after from ten to twenty seconds, while others, again, require just as many minutes. The application of a second fixing bath is to be well recommended.

By a strict observation of the aforesaid the rapid hydroquinone developers will undoubtedly make many friends. Care should be taken that the temperature of the solutions does not increase more than about 16 degrees C.

Finally, I will give you yet a formula of my mixed concentrated rapid hydroquinone developer.

(A.) Dissolve in 100 c.c. water 30 grams sulphite soda, and then 10 grams hydroquinone by heat; further, 25 grams yellow prussiate of potassium likewise in 100 c.c. water. Both solutions are mixed.

(B.) Dissolve 30 grams caustic potassa or caustic soda in 100 c.c. water. After both solutions have been cooled off they are mixed and poured into small bottles, well corked. The mixture is very stable. I have some from November, 1891.

* 100 grams of salts of tartar are dissolved in 200 c.c. of water.

† 100 grams of soda crystals are dissolved in 500 c.c. of water.

‡ The commercial acid sulphite solution also works well.

For use, dilute for rapid development 10 c.c. with 30 c.c. water, for slower development with 60 c.c. water.

The developers should not be thrown away after use; they admit of frequent application, and are of good service for over-exposures, whereas over-exposed plates developed with fresh rapid developer would be lost.

"ARISTO" PAPER.

BY ROMYN HITCHCOCK.

THE greatest desideratum of the amateur photographer for many years has been a rapid and convenient printing process. The ordinary silvered albumen paper is troublesome to work, unless one buys ready sensitized paper from the photographic dealer, or, better still, freshly silvered paper from a practical operator. Then it prints slowly, and the toning and fixing and washing are long and tedious. For a brilliant or smooth surface paper the new "aristo" paper is even superior to the albumen paper, and with the improved method of working with hot water, the prints are much more easily and quickly finished.

I have long believed that some process of coating paper with a collodion emulsion would become popular among amateurs. I mean that they should either make or buy the emulsion and coat their own paper with it. The plan is entirely practicable and has been recommended time and again. It presents the great advantage that such paper can be very quickly prepared and while it will keep fairly well it is so easily coated that there is no need to keep it in quantity.

Through the kindness of the BULLETIN's publishers, I have been enabled to use some of the new "aristo" paper, from the American Aristotype Company, which is a collodion paper. I remember some trials which I made with the paper manufactured by the same company about two years ago. It gave me excellent results, but its propensity to curl was very annoying. At that time the hot-water treatment had not been suggested. The paper soon spoiled on my hands, and I did not do much with it. For toning I used the sulphocyanide bath, for it is one of my principles never to use a made-up bath from a manufacturer, the exact composition of which I do not know. In truth, one reason that I only bought a single lot of that paper was because, as I remember, the makers seemed to rely as much for business upon the sale of the aristo printing and toning outfits as upon the paper itself. I am glad to observe that this is now changed. I worked the paper in my own way, softened it with alcohol, printed deeply, and toned and fixed as usual. The result was entirely satisfactory.

But the hot-water treatment is a great advantage, not only as to economy, but in effect. It should be carried out precisely as advised in the circular issued by the makers of the paper, and I would add that the entire course of instructions given in that circular should be carried out to the letter. I have not, indeed, found it necessary to varnish my negatives with collodion or with other varnish before printing, but I doubt not that some day I shall get one of those annoying red spots in a print from neglect of that precaution. There is a rather surprising bit of advice given about varnishing with collodion. We are told to "warm the negative before flowing." Now, my advice would be, that in any latitude remote from the arctic regions it would be as well to omit the warming until after flowing.

The borax toning bath is all that can be desired. Get 15 grains of pure chloride of gold and dissolve it in 2 ounces of water. This serves as a good stock solution, with approximately a grain to a dram of water. Take 10 ounces of water, add to it half a dram of stock gold solution, and then make it alkaline with saturated borax solution. The bath thus made will tone perfectly. Set it aside in a bottle and it can be used again, with the addition of more gold.

The instructions for fixing are, to add an ounce of a saturated solution of hypo to 10 ounces of water, and fix for twenty minutes. I do not suppose that most amateurs keep saturated solutions of hypo in stock. I should hope not at any rate, and to make such a solution every time one wants to print a picture is troublesome and wasteful. The proportion of solid hypo corresponding to an ounce of a saturated solution is approximately three-fourths of an ounce. Dissolve 1 ounce of hypo in the 10 ounces of water and it will be about right.

I am greatly pleased with the result of my experiments with this paper. If it has any drawback it is that it does not keep indefinitely—it must be used within ninety days. It prints quickly, shows the finest details of a picture, is easily worked, and the finished prints lie flat in a portfolio without mounting. They do not require to be burnished, or squeegeed on glass, for the surface of the paper as it dries is all that can be desired. My custom is to put the prints in pairs face to face between sheets of blotting paper to dry, first blotting them off dry as possible as they come from the last washing.

WASHINGTON, D. C., May 31, 1892.

[From *Photographisches Correspondenz*.]

ABOUT LICHTDRUCK.

BY ADOLF BEYERSDORFF.

(Continued.)

As soon as the eye gets accustomed to the correct appearance of a plate suitable for printing, there is no necessity of further proofs; it should only be remembered, a correctly copied printing plate should at all events have the following properties: The film must show in the transparency a cloudy matt, and when looked at diagonally all modulations of the picture must pass into a general matt, even in the depths.

If the reverse is the case the treatment is the following:

When a plate will accept no color, even under strong pressure and slow rolling, it is then not sufficiently copied or over-moistened, and, finally, the color may be too strong or there may be not a sufficient quantity upon the roller. To remedy this, softer color may be taken and put in more abundance upon the roller, or the plate may be left to rest for several hours, or may be washed with alcohol. If the plate accepts color now more readily, it may be washed with diluted ox-gall, dried and left to rest for half an hour before re-etching; if that is of no avail, such a plate is simply thrown aside as useless. Such a plate has not the correct appearance; looked at obliquely, the picture, with moderate matt, is distinct, but the lights are empty without modulation.

There are also printing plates, where the depths are not strong enough to accept color, whereas the middle tones are already strong; such plates, in their rolled condition, are etched only in the light and middle tones.

Printing plates which give graded pictures can easily be increased in light and strength in this manner.

The printing with chalk paper requires no particular arrangements, because the pictures are trimmed, and varnished, besides, in the ordinary way. The paper should be carefully laid on. It is held up with the left hand, and with the right hand it is laid upon the inked printing plate and pressed tight. Under continued uniform rubbing the paper is now laid upon the plate. If the paper adheres to the plate without bubbles, a few sheets of soft paper are laid upon the same, and the picture is drawn through the press with a strong pressure. This work must be done very quick, or the paper will stick too much to the film.

The rubber should never be drawn over the edge of the plate, as this would be attended with many detrimental consequences. The chalk paper is always with more difficulty removed from the plate than ordinary paper; it is well, therefore, to cover the parts outside of the printing surface of the plate with tissue paper strips, soaked in paraffin. The paper is now lifted on one corner and drawn off quietly and evenly, without stopping. A good printing plate should appear pretty free from color, after the print has been drawn off; if color remains upon the printing plate, it was not sufficiently moistened. A little addition of ammonia to the water does good service. It is oftentimes the case that the chalk paper remains hanging. This shows weak copying; but in most cases it is the fault of the paper, and then a moderate hardening of the film with diluted ox gall is of great advantage. The finished prints have to dry thoroughly before they are varnished, and the retouching must be done before varnishing. A good varnish for chalk paper is the following:

| | | |
|-------------------------------|-----|--------|
| Borax..... | 100 | grams. |
| Pulverized white shellac..... | 200 | " |
| Alcohol..... | 100 | " |
| Water..... | 300 | " |

Borax and water are brought to boil, and the shellac is then added under constant stirring until dissolved. It is then removed from the fire and stirred until half cooled; then alcohol (100 grams) is added, also under stirring. If the varnish thickens too much, it can be diluted with alcohol and water.

I would like to remark, that chalk paper prints much better upon the "schnell presse"; the inking of the paper can be done much quicker, and the lifting of the paper requires hardly any time.

The matt print, which is the most important field for Lichtdruck, should be executed with a mask. Mattdruck never takes off the color as clean as chalk paper; the color may therefore be put on a little stronger than with chalk paper.

There are kinds of paper, which in spite of a good gluing, have a tendency to adhere lightly to the plate. The cause of this is the paper fiber. I have glued such paper still stronger, but obtained no better results; they are not suitable for Lichtdruck. Each paper should be tested upon its printing capacity; particularly if customers furnish the paper, which is oftentimes the case. Much trouble is saved thereby. With good paper and correct printing plates, adhering to the same should never take place.

If the printing is stopped towards evening, the plate should not be left inked, but should be cleaned with oil of turpentine and lightly etched in the morning; the rollers and color stones should also be cleaned very carefully. If the plate

absorbed too much moisture over night, it may pass several times through the press before inking, by putting on some paper.

The "schnell presse," with its many wheels and complicated mechanism, is very difficult to describe, and is not comprehended by many who have never seen such a press in operation. Those who intend to buy one, do best to procure a machine with all the new improvements of Schmiere, Werner & Stein, in Leipzig. A mechanic is always sent with their machines, introducing the mechanism to the one who is to work the machine for the future. The mechanic is also generally conversant with all the difficulties of Lichtdruck. Being constantly on the road at home and abroad, and known in almost every large establishment, he is on good terms with the workmen, and it is comparatively easy for him to become acquainted with all the latest improvements. The cost of such a "schnell presse," is from 6,000 to 7,000 marks. This is a considerable expense, but it is of great advantage to obtain from 500 to 1,500 copies with comparatively little labor instead of 100 to 400 copies upon the hand-press. Small orders are executed with the hand-press, because it would not pay to print less than 500 copies upon the "schnell presse," the arrangement of the plate upon the same requiring much time and attention, whereas it takes only half the time to prepare the hand-press.

FAULTS IN THE LICHTDRUCK PROCESS.

The film peels from the plate during printing. The isinglass film was dried too slow or not sufficiently, at too low a temperature or damp atmosphere. Defective isinglass may also be the cause, or the prepared plates did not iridesce sufficiently.

Double pictures, as the printers call them—"The print has moved"; uneven resting of the paper upon the print film; larger air bubbles between paper and film; worked too slow.

Sweating of the printing plates. Cause: The plates become too cold during the night; the room is too damp. Remedy: Heat the room and keep the doors closed. Open the windows afterwards, but keep the fire going.

The plate does not accept color readily. Cause: Too quick rolling, with not sufficient ink upon the roller; too cold or too damp in the room; too much moistening of the printing plate during etching. In this case, wash with alcohol.

The plate lacks clearness in the light during printing; the plate has been dried at a high temperature; high temperature in the summer; in the winter, over-heated rooms. In both cases, the water has to be cooled with ice.

The plate prints ungraded or accepts too much color. Causes: Not sufficiently etched; too thin a film; copied too long; rolled too slow; soft color; flat negative. Remedy: Adding ammonia to the etching fluids; etching in rolled condition.

The plate prints grainy and rough. Cause: Too thick a film.

The plate will not accept etching fluid; dried in too hot a temperature; exposed to light at the improper time; printed too long.

The plate does not print sufficiently in spite of highest tension; not sufficiently moistened; must be moistened with ammonia; the rubber not in order, or has not been inserted in the middle of supports.

The plate sticks too much. Remedy: Wash with diluted ox-gall.

THE APPLICATION OF ART TO PHOTOGRAPHY.—No. 3.

BY H. P. ROBINSON.

IN my last I gave an illustration of how a very quiet bit of sky could greatly increase the pictorial effect, if judiciously used. I now propose to go further into the subject of the sky, and I do so the more readily as, if I may judge from the many photographs I see, it is a part of the art you very seriously neglect.

Is it neglect, or is it the fault of the climate? If the evidence of photographs, which are put forward as your best work, may be taken, and that is all I have to do with at present, you must have a horrible climate in America! Bright, clear, distinct and cruel, everything is disclosed when it is not under-exposed—but this later defect is not the fault of the atmosphere. Yet these skyless photographs seem to find acceptance. I have lately seen one of them criticised as having “quite a Corot-like effect in the distance,” but what is the use of a fine distance if it is backed up by a blank white sky such as Corot never painted.

Now, I don't want, in my enthusiasm, to think only of art, and forget the proprieties to the extent of offending anybody; but I want to make this article fairly strong, so as to induce you to do better work, and I have been to some trouble about it. I have always been puzzled to know why no good landscape work was done in America. Of course, I know the photographs of the Yosemite Valley, done many years ago; they were big and bold and beautiful, but without feeling. They were what they ought to have been—splendid local views, and would have been just as useful if they had been much smaller. They were wonderfully bright, clean, clear and full of detail. Quite the thing for a local view, from which you ask nothing but facts; but a picture should not tell you everything. Just as a man who insists on telling you minutely all he knows (the more learned so much the worse) is a bore, so is a picture that tells you all and leaves nothing to the imagination. It is not enough to describe all the facts—a picture is not a police court witness. Besides these views, I have received from Mr. Ryder, of Cleveland, a snow scene, which really did express snow with most artistic truth. I have seen nothing else that was above the ordinary level, although I have seen all the illustrated photographic journals and a quantity of pretentious views of Niagara. These, curiously enough, possessed added skies, but so badly done as to serve more as a warning than as an example.

Pondering over this, I wrote to a friend to try to discover why better landscape photography was not done in America. Since I began to write this article the reply has come. I can only hope my friend has exaggerated, for it is a terrible indictment against those who are responsible for our art in America. Here it is:

“I may say we have very little of what you know as ‘atmosphere.’ We have plenty of clouds at certain seasons, but the generality of our photographers make no particular effort to get them, and unless they come naturally in a picture they take no pains to print them in. Most of our amateurs have their printing done, and the professionals are a pretty poor lot, generally speaking, with no regard for what they produce, except so far as it will bring them in dollars and cents.”

If this was a single witness he may be open to doubt, but I find further evi-

dence. In an admirable article in this year's "Mosaics," Mr. Alfred Stieglitz takes the inferiority of American work as a matter of course. He says: "There is no reason why the American amateur should not turn out as beautiful pictures by photographic means as his English brethren across the long pond, and still the fact remains that he does not do so." He admits that your technique is equal to the best, but finds that "what we lack is that taste and sense for composition and for tone, which is essential in producing a photograph of artistic value—in other words, a picture; and, perhaps, his truest words are those in which he hits the weakest place. "Another quality our photographs are sadly deficient in is the entire lack of tone. Those exquisite atmospheric effects which we admire in the English pictures, are rarely, if ever, seen in the pictures of an American. This is a very serious deficiency, inasmuch as here is the dividing line between a photograph and a picture."

Now, cannot this be altered? The difficulty cannot be with all photographers the lack of desire to do the best. Technical difficulties are not in the way, for you are as good as, or better than, we are in that department. The trouble of adding a suitable sky to a landscape is not very serious, neither is it costly. A photograph with a white sky is the exception in England, and has been for at least a quarter of a century, and you do not always care to be behind the age. Added skies are the rule with us and not the exception. The other day I was looking over a large quantity of local views. This class of merchandise is now reduced by competition to the lowest depths as regards price, but they all had skies printed in from separate negatives.

It is not every landscape that demands cloud forms, but nearly every sky has gradations, and very few may be truly represented by plain white, or, still worse, mauve-tinted paper.

It may, perhaps, be of use to describe the kind of cloud negatives required, and how to produce them.

In a negative in which the cloud forms appear with the landscape, as they sometimes will with suitable subjects, the sky is usually veiled, or has a certain amount of density. The shadows of the darkest clouds are seldom or never clear glass. This is not the kind wanted for double printing. What we require is a thin negative with the shadows of the clouds clear, or nearly clear, glass, and with accurate gradations up to the highest lights. Such a negative as would take not more than five minutes to print on albuminized paper. These negatives are only to be made in perfection by using very slow plates or isochromatic plates with a yellow screen and quick exposure. In my own practice I prefer the latter. With ordinary plates there is sometimes a difficulty in securing the proper relations of light and shade. Take a sky, for instance, of frequent occurrence—a dark blue sky with rosy clouds; this would come very flat with the ordinary plate, and with greater truth and ease on a color-correct plate. I use these plates of the slowest kind, a pale yellow screen and a small stop, and exposed in the primitive fashion of taking the cap off the lens by hand, rather quickly. For developing, I use pyro and ammonia, adding restrainer rather freely to keep the shadows clear. Any other developer would do except those that give nothing but weak images. It would have greatly advanced the progress of photography if a quantity of these new developers had remained undiscovered. The thing most wanted in developing a sky is not any particular developer, but patience and knowledge of what is required.

There is no particular difficulty about printing the sky. The landscape negative should print white. It is seldom that the sky of a properly exposed and developed landscape prints dense enough. If too weak, it should be stopped out with black varnish, and, if the space is large, it would be well to cover most of it with orange paper, as large spaces of varnish are apt to break up and are easily scratched. It is best, when possible, to apply the varnish to the back of the negative. If it is painted on the film side, the effect is hard.

When a print is taken, the place where the sky ought to be is, of course, represented by white paper. Now, take a suitable sky negative and place it in the printing frame, and adjust the print so that the clouds should come in the desired place; its thinness will easily enable you to see this. When exposed to the light, the landscape part should be covered by a dark cloth. This cloth should be gently moved so as to vignette the sky gently into the landscape, and, if the negative is of the right quality, the operation will be over in a few minutes.

I have seen it recommended that the landscape should be first taken, and then that, without moving the camera, any sky that may be present should be exposed on another plate with a quick shutter. This method could only have been recommended by one who had had no practical experience, yet it has gone the rounds of the handbooks. I don't hesitate to say that it would be impossible to so mask the sky as to exactly fit the outlines of the landscape, and the only means of meeting the difficulty would be, regardless of truth, to lower the sky. There is no necessity for the elaborate and minute masking that is often recommended. On looking over a couple of hundred of my own pictures I do not find one that has any masking on the sky whatever. The sky should be taken as nearly as possible clear down to the horizon, and the only masking required can be done with a piece of black velvet during the printing. It will be found that if the sky negative is carefully vignetted into the landscape all purposes will be served, and there will be no unsightly patches of white where the masking has not been perfect. If the sky has not been printed too dark, which should never happen, the amount of toning down it may cause, even to delicate tree forms, will not be visible. It is not often that a sky should be as dark as the one in the illustration, "Make Hay while the Sun shines," yet that was printed over the trees without any difference being visible—although I have no doubt there will be some who will discover the injurious effect now it is explained. Greater care must, however, be taken with light buildings, but if sufficient precautions be taken to spread the vignetting, a good deal of license may be taken, and almost anything is better than to show a gap of white running round the skyline of houses and other buildings.

There can be no doubt that the use of a sky from a second negative, while it gives the judicious photographer power to follow nature more correctly, also affords the careless another chance of going wrong. But all liberty does that. The wider the limits, the greater opportunity for misusing them. You must always keep in mind that or this method is recommended to give you an additional means of approaching the truth of nature, as well as aiding pictorial effect by obviating that white-paper substitute for a sky which is neither truthful nor beautiful. There are some precautions which may be stated, but the appreciation of other truths can only be discovered by close observation of nature.

The sky should be a harmonious and sympathetic background to the landscape. There must be no departure from the truth of nature. Startle, if you will,

by an unusual effect, but be careful that such an effect is possible. At the same time you need not listen to the impracticable purists who will tell you that no sky can be true or right that did not exist at the time the landscape was exposed. I am often obliged to reiterate the fact, which shocks some people, that nature is not an artist and knows nothing about picture making. One of the greatest uses of a separate sky is to correct the artistic mistakes of nature. Nature is capital raw material ; but never make the mistake of thinking it is the manufactured article. Keep true, but get the best truth you can. The sky changes incessantly, and it does not follow that the one you happen to find when you take the view, is the best for composition and effect.

Double printing, as I have said, affords the opportunity to go wrong. Photographers are not slow to take the chance, and go wrong accordingly. Deviations from natural effect must be guarded against. The sky must be lighted from the same source as the landscape ; clouds photographed from the zenith will not be correct if printed so as to appear near the horizon ; the sun should not be made to set in the east. These and other absurdities have been perpetrated. Let all your work be the outcome of loving observation, and, above all, never use the same sky in two or more pictures. Almost anything may happen in nature from earthquakes downwards, but never can precisely the same sky appear in two places.

OBITUARY.

LEWIS MORRIS RUTHERFURD.

ON Decoration Day, at the advanced age of seventy-six, this well-known astronomer and photographer passed to his final rest. Who amongst us that have lived in New York during the past twenty years have not heard of his achievements in astronomical photography.

Mr. Rutherford was born in Morrisania, N. Y., November 25, 1816. He was a graduate of Williams College, of the class of '34. He studied law with William H. Seward, at Auburn, and was admitted to the bar in 1837. His scientific work dates from 1843, and was chiefly in the line of astronomical researches with the spectroscope and by photography. In 1863 he was named as one of the members of the newly erected National Academy of Sciences. In 1870 he constructed his wonderful ruling machine, producing as many as 17,000 lines to the inch, on glass and metal, and used them in spectrum analysis.

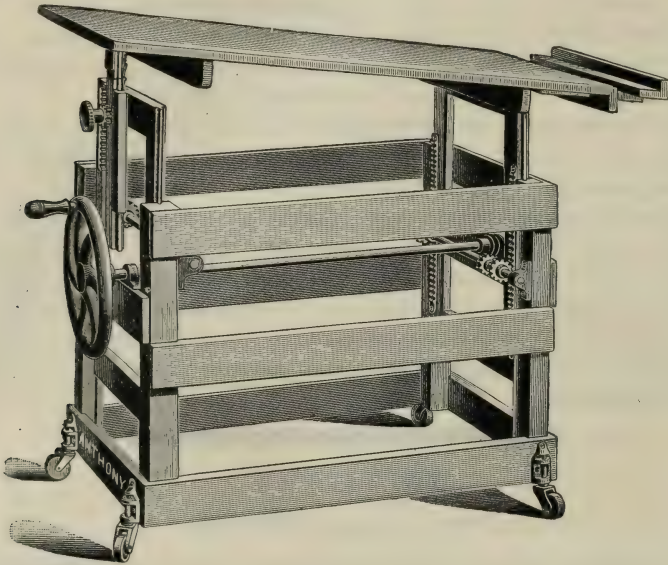
He also constructed two photographic telescopes—one, eleven and a half inches, and the other, thirteen inches, in focus, with which he made some of the finest photographs of the moon ever obtained upon a photographic plate, besides photographs of eclipses of both sun and moon, and of stars.

He was one of the Trustees of Columbia College from 1858 to 1884, when he resigned, giving his beautiful collection of astronomical instruments to the College Observatory.

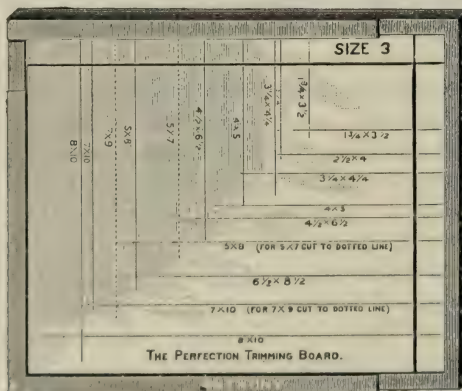
Such a life of patient work in the cause of science should have its record indelibly impressed upon the tablets of the future. Few men are capable of such delicate and painstaking tasks, probably not more than one in a century of the world's existence, and we do not realize the worth of their labors until they leave us.

NOVELTIES IN APPARATUS.

THE camera stand shown in the cut is termed "The Giant," and is manufactured by our publishers. It is simple, compact, and very strong. The raising and lowering is done by means of an endless screw which works in a pinion, which, in turn, actuates a rack fastened to the movable portion of the stand.



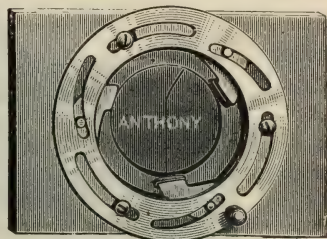
This construction gives great strength and lifting power in a minimum amount of space. It has a range of height from 28 to 42½ inches, and the top may be inclined forward at will.



The Perfection Trimming Board is the name given to a very ingenious device for accurately trimming prints to any desired size without measuring or marking. The lines shown in the cut are covered by a heavy glass. The print to be trimmed is held in place by a movable glass pattern, held firmly against the raised edge of the board, and the two sides trimmed with a sharp knife. The

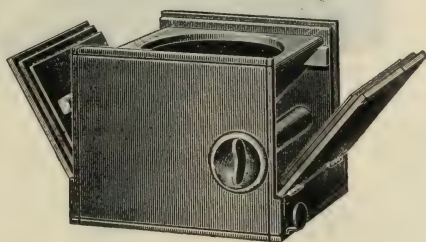
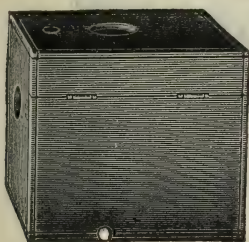
print is then reversed and the other two sides cut. It is by far the best print-trimming device we have ever seen.

The shutter adapter here represented is an ingenious device for clamping the same shutter on lenses of varying diameters. It is simple and sure to fit, adjusted in an instant by the movement of a single knob, and is altogether a decided addition to any shutter.

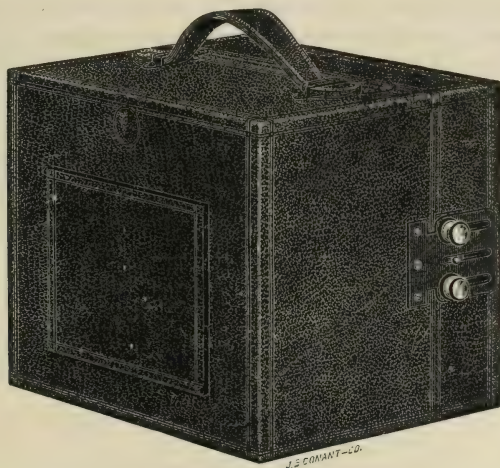


The "Petite Kamarette" represents the acme of simplicity and the smallest size of any camera of equal capacity known. It is constructed on the same principle as the larger "Kamaret" and when loaded is capable of taking fifty pictures, each of a diameter of $3\frac{1}{2}$ inches.

It is operated in the same manner as the larger sizes, except the insertion of the roll, which is, if anything, more simple than in the larger sizes.

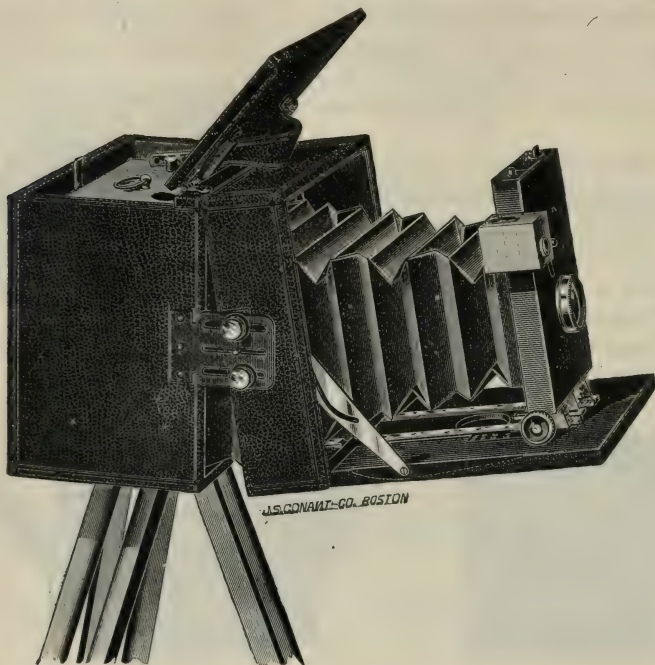


The "Folding Hawkeye" is the latest thing in Hawkeye cameras. It retains all of the features which have given to the cameras of this name their deserved popularity, with some important modifications all its own. The con-



necting frame required by all other cameras of this description is conspicuous by its absence. It will accommodate glass plates, cut films, or films in rolls, with equal facility. The lens is of the rapid rectilinear type, and the shutter the same as in the regular Hawkeye.

When open, it is of the appearance here shown (the operation occupying only the fraction of a minute). The swing-back attachment is so arranged as to



insure the vertical position of the plate so long as the main body of the camera remains rigid.

OUR ILLUSTRATION.

The handsome frontispiece of this issue of the BULLETIN is from a print by Mr. H. P. Robinson, and illustrates his article in this issue of our journal on "The Application of Art to Photography."

The picture should be studied in connection with this article, and should prove highly instructive. Any words of comment or praise from us are entirely out of place here, and we simply call attention to the connection between the illustration and the paper of Mr. Robinson, believing them to be unusually good food for thought for all.

BACK NUMBERS OF THE BULLETIN WANTED.

We are requested to ask for Nos. 1 and 21 of the BULLETIN for 1887. Perfect copies of the above numbers will be received and full price paid by sending to office of this journal, 591 Broadway, New York City.

[From the Daily Graphic, London.]

PHOTOGRAPHY IN COLORS.

LECTURE AT THE ROYAL INSTITUTION.

MR. FREDERICK E. IVES, of Philadelphia, yesterday explained to the members of the Royal Institution, at their theatre in Albemarle street, his invention for the production of photographs in the colors of nature. As exemplified at the meeting yes-

terday, the system was applied only to the production of magic lantern views on the screen, and to similar views seen in a kind of stereoscope which the inventor calls the heliochromoscope; but at his lecture next week Mr. Ives will explain how, on the same principles, permanent photographs in colors may be produced, though it is admitted that at present this application of the process is so complicated that it can be successfully carried out only by a scientific expert.

Mr. Ives began by reviewing the whole history of the investigations into laws of color, and the possibility of color photography. The original suggestion was made twenty-seven years ago by Mr. Henry Collen, Her Majesty's painting master, whose idea was to make three negatives—one by red light, one by yellow, and one by blue—and to superpose on a white surface the three color prints thus obtained. At that time no method had been discovered of rendering photographic plates sensitive to one color only; but the experiments of Dr. Vogel and others rendered this possible; and Mr. Ives' system really carries out the original idea of Henry Collen, corrected by the later discoveries of Young, Helmholtz, Maxwell and Stoltze in regard to the nature of color sensations, which have proved that the general idea that all colors are based on the three principal colors, red, yellow and blue, is erroneous. Mr. Ives' invention not only, he says, recognizes, but definitely represents, the application of the Young-Helmholtz-Maxwell theory of color vision. It "involves the production of one negative by the joint action of the red, orange, yellow and yellow-green rays, in definite proportions, to represent the effect upon the fundamental red sensation; one by the joint action of the orange, yellow, green and green-blue rays, in definite proportions, to represent the effect upon the fundamental green sensation; and one by the joint action of the blue-green, blue and violet rays, in definite proportions, to represent the effect upon the fundamental violet sensation." The three negatives are produced in a single camera with a single rapid rectilinear lens on a single sensitized plate; but by the insertion of such color screens as those described, three images are formed, which reproduce the light and shade as it appears to the respective fundamental color sensations; and by means of mirrors these three images are thrown on to different parts of the sensitized plate. From the triple negative a triple positive transparency is made, and the three images are superposed—one with red light, one with green, and one with true violet.

Mr. Ives finally illustrated his system by throwing on the screen a picture of a little girl in a red dress, standing amid foliage, all the natural colors being vividly reproduced. By alternately leaving exposed only one of the three positives, with its colored glass, he showed separately the elements of which the colors in the picture were composed; and by removing the positives and combining pairs of the colored glasses he gave some startling illustrations of the accuracy of the Young-Helmholtz-Maxwell theory of color vision, the red and green in combination producing yellow; while the three colors together formed a pure white. Mr. Ives' invention was, however, even more effectively illustrated by means of the heliochromoscope, in which a triple negative of a flowering geranium produced an impression of the plant in really brilliant and perfectly natural colors.

SOME CONDITIONS INFLUENCING THE WELFARE OF PHOTOGRAPHIC SOCIETIES.

[Brixton and Clapham Camera Club.]

BY W. H. HARRISON.

A PHOTOGRAPHIC organization may be prosperous in its intellectual capacity, or it may be prosperous in its funds and the number of its members; it may also be prosperous in both. When it is but materially rich, a local society may go quietly and comfortably on its way, and be little esteemed outside the limits of its own parish; when, however, its intellectual powers add considerably to the progress of photographic art and science, its discoveries attract the attention of the world.

That a local society should raise itself above the dead level of the general run of such organizations, it is necessary that each individual member, when time and opportunities permit, should take up some special work, and afterwards place the results before the whole body of the members. In reading the records of the average proceedings of local photographic societies, one would suppose that none but silver and a few other processes existed, and that we have nothing to talk about at our meetings but the working of common processes connected with the plates, films, and papers ordinarily sold in commerce. What is wanted is, that one member shall say, "I will carry on novel photographic researches with the salts of iron"; that another shall resolve to do the same with uranium salts; that others shall experiment with the salts of nickel, cobalt, and other metals; that one member shall take up the primuline process, and discover its possibilities, and so on, so as to get away from the more common processes, and to discover new things about the others. We should also have men quitting the beaten track in matters artistic; the finest artistic effects in photographic printing are, I think, produced by Klic's—better known as the "photogravure"—process; yet, where is the amateur who works the same? Dr. Emerson announced his intention of beginning to work at it, but I have not yet heard of the results.

I do not believe in appointing committees to conduct such investigations from a pious sense of duty and a mere belief that the work ought to be done. It is for the individual to strike out new paths, not as a task, but as a pleasure. It is for each of our younger members to resolve to no longer live as a nonentity, but to do something to increase the store of human knowledge, and to stand out as a benefactor of the race.

What dreary reading is to be found in the local society reports in the photographic press! We are, perhaps, informed therein that Mr. Jones sat down amid loud applause, after reading a valuable paper—in which the reporter can find nothing worth printing. Sometimes we are told how J. Smith, Esq., J.P.—a man knowing nothing of photography—honored the Photographic Society of Little Pedlington with his presence, and how all the members groveled before him. I think that the editors of all the photographic papers will thank me for speaking of the lack of general interest and of useful information in the average reports of the local societies. They cannot well leave the reports out, because their circulation might then fall in the various localities. Let, then, some of the energetic young men connected with this club bring in some results of original research, and make the reports of our proceedings worth reading. The club has the advantage of possessing as president a physician of high attainments, who can appreciate the value of original research by the members, and who himself does not much follow beaten tracks in photography; a president who does not feel satisfied unless he can set up his camera in the crater of an active volcano, such as Hecla, is sure to encourage all those members who begin to strike out new paths of experimental investigation.

One of the largest and most prosperous local photographic societies in the kingdom is the Manchester Amateur Photographic Association, and I was told at one of its meetings, by one of its most active members, that lantern displays and lectures, to which the public were admitted for a trifling fee, had great influence in bringing in new members and increasing its popularity. Close at hand we have a busy center of traffic and commerce, and if next winter we advertised lantern entertainments for the display of instantaneous photographs of scenes near Brixton Station, they would probably "draw," as, apart from other considerations, so many persons would be curious as to whether they or their houses had been pictured.

A good library furnishes an inducement to join a photographic society. The Camera Club has a good library, and the Photographic Club a moderately good one; those of all the other photographic societies of London are, so far as I know, poor in the extreme. Perhaps we shall be long before possessing a good library, but the central free library is now being built close by the spot on which we are now assembled. It might be well if this club memorialized the authorities thereof to the effect that the

collections of chemical and photographic books they have already placed in the branch libraries are so poor as to be beneath contempt, and that they may as well possess one decent collection of scientific works and books of reference, so that people shall not be obliged to journey hence to the British Museum or the Patent Office Libraries because of the literary poverty of our own locality.

A good honorary secretary is essential to the welfare of every photographic society; he is to the society what the lens is to the camera; he is the official means of communication with the outside world; and, if he be intellectually dim, woeful will be the results to the organization he represents. He has to do all the hard work, and is forgotten while everything goes on well; when things begin to go wrongly, he has to bear all the abuse. When you smite him on the one cheek, he has to turn to you the other also; and, when the money balance of the society is on the wrong side, he has to cheerfully make up the deficiency out of his own pocket. We cannot too much honor such laborious and long-suffering individuals. I think that it is the duty of the wealthier members of the photographic community in London to "dine" all the photographic honorary secretaries once a month. Had Mr. Louis M. Biden adopted this plan before he attempted to federate all the London photographic societies in hot haste, he might have been more successful in carrying out his plans. One stands appalled at the magnitude of the knowledge of the public aspects of photography in London, which would be concentrated at a dinner party of the secretaries of the various organizations.

Exhibitions, summer outings, and other incidents of existence have their influence on the welfare of photographic organizations; but enough has been said upon this subject for one evening.

[From *Journal of the Photographic Society of India.*]

COLLODIO-BROMIDE ORTHOCHROMATIC EMULSION.

BY COL. J. WATERHOUSE, S. C., *Calcutta.*

[From Author's corrected Proofs.]

SINCE the meeting in January I have been working on what may be called the "Albert-Jonas" collodio-bromide orthochromatic emulsion as opportunity offered, and am able to give a few further notes about it. Several batches of emulsion have been made up; often hurriedly, but without a failure so far. Preparing the emulsion at a rather higher temperature, and keeping it for three or four days before washing, seems to be an advantage for half-tone work, and in this way plates have been obtained which, when exposed moist, were quite as sensitive as gelatine plates of medium rapidity (19 Warnerke). It is very curious that the colored films cannot be used dry. They become quite insensitive and fog all over, even if the colored tincture is washed off before drying. Plates coated with preservatives containing annatto, berberin, etc., after washing off the erythrosin tincture, and then dried, have given promise of better results (quercitrin also promises to be useful in this direction), but other work has prevented me from working out a way of using the plates dry.

A rough investigation as to the use and advantages of the picrate of ammonia, by photographing the spectrum on the collodio-bromide emulsion plates flowed with a solution of this salt containing ammonia, shows that it not only may act as a yellow screen, but it is also a very strong sensitizer for the greenish-yellow rays about half-way between D and *b*. The plates were exposed to the spectrum in a small spectrograph on Vogel's principle, and show a strong band of maximum sensitiveness in the blue from G to F, between F and E there is very little action, and then there is a strongly marked rise of sensitiveness in the region lying midway between *b* and D, extending over about half the total distance, the sensitiveness again sinking rapidly to D, beyond which the action is very faint.

The band of sensitiveness in the yellow-green was so strong that at first it appeared as if traces of erythrosin in the developer or otherwise might have caused it, but it was found on comparison that the sensitive band of erythrosin with the same emulsion and spectrum was distinctly more towards the yellow and close up to D. On gelatine plates the rise of sensitiveness in the yellow is not so marked. This heightening of the sensitiveness of silver bromide to the yellow and green rays by certain yellow dyes has been noticed by Dr. Eder and Messerschmidt, notably with diamidoazobenzol. Some similar experiments were made with berberin and tetranitrofluorescein, but they did not show any increased sensitiveness in the yellow or yellow-green.

A solution of quercitrin 1 : 1,000 without ammonia, flowed over the plates coated with the washed emulsion, gave good results, the sensibility being about the same as wet collodion, the plates being exposed moist. The image was, however, not nearly so rich as with the orthochromatic tincture.

For developing, the para-amidophenol developer, given in my former paper, has proved exceedingly good, and several plates can be developed in the same solution day after day without much apparent loss of power. Ferrous oxalate has also been found very suitable. Eikonogen and carbonate of lithia at 1 per cent. with 2 per cent. of sulphite give a good dense image.

For copying line-work the emulsion seems to require a slight modification to secure quite clear lines—this has not yet been worked out. With the ruled screens for photo-block work considerable difficulty was experienced in getting sharpness, although wet collodion plates exposed under apparently exactly the same optical conditions came out quite sharp. It is possible that the highly colored moist film may disturb the achromatism of the lens in the same way as colored glass screens do.

We find that for copying in the studio the emulsion practically only requires about half the exposure of wet collodion, but the results and general quality of the image are much better, and it is far easier to secure freedom from spots and stains.

We have continued to use the coloring tincture of erythrosin silver nitrate and ammonium picrate at 1 : 1,000 given in my paper. It has been found to keep well, even in hot weather; but as there is some precipitation, it may be better to prepare it fresh at short intervals. The tincture is usually flowed over the wet film.

CHROMO-PHOTOGRAPHY.

The controversy with reference to chromo-photography and Mr. Ives' recent demonstrations does not seem to be confined entirely to the technical press, for Dr. Vogel had a long letter in the *Standard* on the subject of his own investigations and that of others many years ago. Other letters on the subject have also appeared in the lay press from other writers. Now, every one in this country is always anxious to give credit to whom credit is due, whatever may be their nationality. There is another phase of the question that appeals to the more practical portion of the public, namely, the commercial value of the results. Mr. Ives has shown photographs in colors on the screen and described the methods by which they were produced. Dr. Vogel's work lies in a different direction, though on the same basis—that of producing chromo prints by printing from three plates made from three negatives; that is, pictures in all the colors of nature with three printings only. So far as we are aware, none of the doctor's recent examples have reached this country as yet. But we are informed by a friend who has had the opportunity of seeing them, and who is fully qualified to judge, that they are far and away the best results in this direction he has hitherto seen; and he is quite familiar with the best that have been shown in this country.—*British Journal of Photography*.

THERE seems to be something radically wrong about the expression "as full as a goat." Who ever saw a goat that wasn't ready to eat?

ANTHONY'S Photographic Bulletin.

EDITED BY

Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by **ARTHUR H. ELLIOTT, Ph.D., F.O.S.,**
and a corps of practical assistants.

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E. & H. T. ANTHONY & CO., Publishers.

LYNN CAMERA CLUB.

OUTING TO CLINTON AND VICINITY, MAY
17TH—(Continued).

THE hard cider line having been passed some distance back, the vigilance so long and faithfully exercised over the weaker ones could now be relaxed, as they were among friends good and true.

After dinner, the party were assembled with the rectangle of the great barns for a background, and the camera pointed. The party consisted of W. H. Drew, J. Fred Ingalls, E. F. Bacheller, Charles F. Pierce, W. A. Pevear and wife, Dr. J. W. Goodell, Miss Goodell, Miss Alice Sawyer, A. J. Chase, Miss Augusta Reynolds, Miss Susie M. Bancroft, Miss Annie P. Newhall, J. E. Burrows, Henry Sawyer and wife, C. H. Hastings, A. L. Hastings, Edward L. Rice, C. A. Lawrence, David Dias, Clarence C. Coulter, of the *Courant*; Edward Alley, Mrs. Charles M. Alley, Miss Mabel Breed, Miss Jennie B. Bourne, Miss A. J. Lawrence, Miss Grace Parsons.

The fiends having very acceptably done their work, the company adjourned to the

parlors, where a presentation of a picture was made to Miss C. S. Newhall, the hostess of the day. The subject was "The Surf Upon the Lynn Breakwater," and the enlargement was the work of the artist, E. F. Bacheller.

The presentation was made by a member of the party; Miss Newhall, notwithstanding her complete surprise, gave response to an able and fitting acknowledgment.

The party then occupied the time in viewing the grounds and the distant hills.

From the cupola of the barn owned by Linville S. Newhall, a view can be had in any direction for fifty miles.

With many expressions of regret at leaving and an enthusiastic acknowledgment of the splendid time enjoyed, the cameras were packed, the bugle tooted, and the Camera Club were transported to the scene of their early arrival, having passed a day among the hills, long to be treasured among the treats of their lives.—*Abstract from Lynn Item.*

AMERICAN INSTITUTE—PHOTOGRAPHIC SECTION.

THE last meeting of the section for the 1891-92 session was held at 113 West 38th street on Tuesday, June 7th. In the absence of the President and Vice-President, Mr. Lawrence Van Wyck presided.

The Secretary reported the receipt of copies of photographic periodicals and of the journal of the Photographic Society of Great Britain. He also read a letter from the California Camera Club, proposing the formation of an Exchange Club of prize pictures. The idea suggested is that each society hold two or three exhibitions annually, and that copies of the prize pictures be collected and sent to each club in the Exchange. On motion, it was decided to delay action until the next meeting.

The usual vote of thanks was recorded for the periodicals donated.

Mr. A. D. Fisk exhibited the Genie hand camera, a compact magazine camera designed principally for producers of lantern slides.

Mr. O. G. Mason, speaking of the death of Mr. Rutherford, stated that the deceased gentleman was a life member and past-president of the section. He succeeded Mr. John Draper as president of the American Photographic Society, and it was during his term of office that this society affiliated with the Institute. He was a man for whom all entertained personal love and respect. One of the first to apply photography to astronomy, he

made probably the finest astronomical photographs in existence. During the latter part of his life he gave up active work, donating his instruments to Columbia College. "We have yet," said Mr. Mason, "to look for finer work." He always maintained his interest in photography, employing others to work under his guidance. Concluding, Mr. Mason said that it was fitting that the section should take action on the passing away of such a man.

A resolution was adopted that, "The Photographic Society greatly regret the decease of Mr. Rutherford, recognizing his great work and the many qualities which endeared him to all." The Secretary was instructed to place this resolution in the records of the section.

The Chairman then called upon Mr. A. D. Fisk to furnish the instruction and entertainment for the evening. Mr. Fisk had brought along a miscellaneous collection of slides, and these were passed through the lantern. Views of the Hudson River Tunnel on the Jersey side were very good, one interior being a splendid flashlight. Another interesting slide was the Sugar House Prison, built in 1763, and recently demolished. Several scenes in the Five Points' Refuge were very pathetic, one being a picture of some forty little waifs saying prayers, preliminary to a comfortable bed. A picture of the children's parade in Brooklyn, made with an Anthony magazine camera, was a capital snap shot. Scenes near and in Philadelphia were good, and included views of Girard College, and an interior showing the statue of Stephen Girard, and the Elkins house. Some of these slides were made on printing-out plates. Plates are coated with a gelatine emulsion and printed by daylight like aristo paper. They are then toned and fixed. They made capital slides of a rich warm color and will probably be extensively used.

Mr. Becker exhibited slides showing the neighborhood of Hoboken, and Mr. Babcock also showed a very interesting collection. Several landscapes taken in the winter were very fine studies and elicited considerable applause. Flashlight portraits by the same gentleman showed considerable artistic taste and a good knowledge of the methods of grappling with the difficulties attending such work.

A most enjoyable evening was spent, and many expressions of regret that there was to be a vacation were heard.

These meetings of the Photographic Section of the American Institute are open to all, and

the courteous secretary, Mr. Mason, mails, monthly, notices as to programme. The attendance during the past session has been very large, many novelties have been exhibited and much information imparted. The section is to be congratulated on its successful career.

THE INTERNATIONAL UNION OF PHOTOGRAPHY.

"THE society has for its object, in the first place, "the dissemination of ideas, and the making of constant efforts to establish unity of action in regard to photography, so that facilities for the comprehension, study and utilization of any new facts might be afforded to all. These facts will henceforth be published in accordance with a method universally adopted, based and expressed on a system generally admitted. The Society also has for its object the collection of information in regard to all fresh discoveries in photography, in the Old and New World, in order to make them universally known to all persons interested in the conquests made by the genius of man over the, as yet, unknown dominion of the photographic art." The General Secretary's address is, M. Pector, 9 Rue de Lincoln, Paris, and further particulars may be obtained of him.

THE PHOTOGRAPHIC SOCIETY OF JAPAN.

THE annual meeting of this Society was held on Friday, May 13th, in the rooms of the Geographical Society of Japan, Nishikonya-cho, Tokio.

There was an exhibition of work by members, and of apparatus, during the day time. Amongst other things were shown a large collection of the most modern apparatus by Mr. R. Konishi. A set of photographs, on porcelain, excellently reproduced. The Secretaries did not receive any note from the maker of these enamels, and would like to hear from him. A series of fine prints on gelatino-citro-chloride paper by Mr. G. Brinkworth, and an album of the Tokaido by Mr. K. Ogawa.

At 5 P. M. there was a meeting for the election of officers and for other formal business, Viscount Okabe, Vice-President of the Society, in the chair.

The minutes of the last meeting having been read and approved, the Chairman called on the Secretaries to read their report for the past year, which they accordingly did as follows :

Your Secretaries have again to report the successful working of the Society for the past year. The membership has greatly increased, there being now nearly 140 on the list. During the past year there were five regular meetings, two lantern exhibitions of work done by members during the summer, and several outdoor meetings. Various processes were demonstrated, but none of remarkable novelty. Perhaps the most interesting meeting, technically, was one when a machine was fitted up for timing shutters—members brought their shutters, and the exposures actually given by them were recorded.

Various members of the Committee have regretted the long intervals that elapse between meetings, and the delay that there is in sending out the notices of a meeting even, when it has been decided on. The cause of this delay is due to the Society having no fixed place of residence, or fixed time of meeting. When meetings have to be called, the process is as follows: In the first place, there being no regular time of meeting, it has to suggest itself to some one that it is nearly time that there should be another meeting. If he is not one of the Secretaries, he has to communicate with one of them. This Secretary then calls a Committee meeting, of necessity giving several days' notice. The Committee meeting has then generally to find a subject and afterwards to suggest a day, and a place of meeting, but can do no more, as there is no fixed place of meeting, and there can be no certainty of getting any suitable hall on a particular day. It is generally left to one of the Secretaries to try to find a hall. If he cannot get one for the day suggested, it may be necessary to call another Committee meeting. Even if it is not, he has to communicate with the other Secretary even before the notices can be printed, as these have to be in both Japanese and English. All this involves great delay, and, in fact, entirely apart from the labor thrown on the shoulders of the Secretaries, the system is intolerably cumbersome. It is, therefore, the wish of the Committee, and particularly of the Secretaries, that some arrangement be made for a fixed date and place of meeting. This need not in any way prevent meetings at other places and times from those fixed for special purposes.

We have to record, with deep sorrow, the recent sad death of Mr. T. Hayasahi, Attaché to the Korean Legation, whose lantern slides were exhibited only at the last meeting of the Society.

This report having been passed, the Treasurers were asked to present their report. Mr. A. J. Hare having stated that the Society was in a financially flourishing state, presented the following balance-sheet:

BALANCE-SHEET OF THE PHOTOGRAPHIC SOCIETY OF JAPAN, FOR THE YEAR 1892.

| | | |
|--|----------------------|----------------|
| 1892. | <i>Cash Account.</i> | |
| To Entrance Fees and subscriptions— | | |
| From 22 foreign members..... | \$65 00 | |
| From 17 Japanese members..... | 35 00 | |
| | | \$100 00 |
| To Cash balance 1891..... | 70 55 | |
| | | <hr/> \$170 55 |
| 1892. | | |
| By Hire of rooms and expenses..... | \$35 50 | |
| By Printing reports of 1891 meeting..... | 10 00 | |
| By Canvas screen for lantern exhibition..... | 9 50 | |
| By Printing and postage of notices, &c..... | 18 10 | |
| By Postage, correspondence..... | 2 70 | |
| Stationery..... | 20 | |
| By Carriage and messengers..... | 2 50 | |
| By Balance in hand..... | 92 05 | |
| | | <hr/> \$170 55 |
| 1892 | <i>Assets.</i> | |
| Subscriptions and Entrance fees due— | | |
| 10 members, 1890..... | \$30 00 | |
| 23 members, 1891..... | 53 00 | |
| 76 members, 1892..... | 154 00 | |
| | | <hr/> \$237 00 |
| Property of the Society— | | |
| From 1891 account..... | \$10 80 | |
| 1 screen (for lantern)..... | 9 50 | |
| Postage cards..... | 1 12 | |
| | | <hr/> 21 42 |
| Balance in hand..... | 92 05 | |
| | | <hr/> \$350 47 |
| 1892. | <i>Liabilities.</i> | |
| Rent and Expenses Annual Meeting for 1892 | | |
| estimated at..... | \$20 00 | |
| Balance in favor of Society..... | 330 47 | |
| | | <hr/> \$350 47 |

The officers for the past year having retired, it was proposed by Professor J. Milne, seconded by Professor Kikuchi, that they be all re-elected, and they were re-elected accordingly.

It was proposed by Professor Kikuchi, seconded by Professor C. D. West, that Count T. Toda and Dr. E. Divers, F.R.S., etc., be elected Vice-Presidents of the Society. They were unanimously elected.

The following was then proposed by Mr. C. D. West, seconded by Mr. D. Kikuchi:

“That there be a monthly meeting of the Photographic Society on a definite day, say the first Friday in each month, at a definite place, say the rooms of the Geographical Society, and at a definite hour, say 5 P. M.

This monthly meeting to be held in any case without any special summons being sent out, or even without any special work to show. That the members meet thus and hold a conversazione, refreshments being provided by the Society. Any members who have any work to show, or any apparatus, or process to explain, should bring such, in order to promote technical discussion and conversation."

After some discussion, during which it was decided that it would be necessary to send out, at any rate, a post-card reminding members of each meeting, the resolution was passed, and the Secretaries were instructed to make inquiries about a likely place of meeting, and to report to the Committee.

It was then put from the Chair that there be sent from the Society an expression of its sympathy with the family of the late Mr. T. Hayashi. There being no objection, Mr. I. Ishikawa was instructed to write a letter of sympathy in the name of the Society.

This concluded the formal meeting, and there was an interval for refreshments till 7 P. M.

At that hour there was a very good attendance, and Viscount Okabe having again taken the chair, Mr. K. Ogura read a paper on "Stripping Gelatine Films," and gave a demonstration of the process. Afterwards, Mr. T. Saito demonstrated the stripping of collodion films and the applying of them to wood for the engraver. Both demonstrations were highly successful, but the details are of so technical a nature that they would probably not be interesting to readers.

Mr. C. D. West then read a short paper on "A New Toning Process for Silver Prints." This process is simplicity itself. The prints must be on plain paper. They are printed in the usual way, are fixed, and are then thoroughly washed. After this, they are dipped in a solution of sulphureted hydrogen till they reach the tone wished for. Prints were shown that were of an excellent tone. Mr. West said that probably photographers would think that such prints were of necessity the reverse of permanent; but he saw no reason to think so. Sulphide of silver was really the most permanent silver salt he knew of. As a matter of fact, he had failed to make any alteration on prints, either by dampness or by the action of light, during one year.

After this paper was read, Mr. W. K. Burton exhibited the action of a very novel form of optical lantern that had been brought from America by Dr. A. B. Guerville. This apparatus, although occupying little

more room than an ordinary lime-light lantern, distils its own oxygen and hydrogen substitute as the exhibition goes on. Considering that the gear was in the hands of a lanternist of but slight experience, and that it was tried by him only for the fourth time, it worked with remarkable smoothness. The light was of extreme brilliancy, and the audience seemed to highly appreciate a set of scenes that were projected on the screen.

The proceedings terminated with a vote of thanks to the Chairman.—*From* W. K. BURTON.

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Bibliography.

A TOO SHORT VACATION, by Lucy Langdon Williams and Emma V. McLoughlin. Philadelphia, J. B. Lippincott & Co., 1892.

This is a prettily gotten-up little volume of some 250 pages, detailing the adventures and experiences of two young ladies during a brief visit to Great Britain and the Continent.

It is illustrated throughout by views and pictures taken by them with a hand camera, of which the Hawkeye, Kamaret and Kodak are prominent types, and show how much enjoyment may be added to a trip of this kind by taking along one of these dainty little instruments.

CRAYON PORTRAITURE. By J. A. Barhydt. The Baker and Taylor Co.: New York, 1892.

A carefully prepared handbook for both professional and amateur artists. It is a small but comprehensive work of some 130 12mo pages, and is especially designed as a students' manual.

The full details of crayon work and manipulation are given in the first part, which carries the worker through the various stages, from the enlargement of the negative, the paper used, the outlines and different methods of working them up, to the finished and framed portrait.

Another section is devoted to the application of transparent liquid water-colors for coloring photographs and materials required in their use, closing with the methods of production of the so-called French crystals.

The book is well printed, well written and attractively bound, and altogether a welcome addition to the library.

DICIONNAIRE DE CHIMIE INDUSTRIELLE. Par A. M. Villon. Paris, Bernard Tignol.

This publication bids fair to be an elaborate

discussion of the various applications of chemistry to modern manufactures of all sorts. It seems to us to be one worthy of more than a passing mention.

The details of the various processes given are full and complete, and well illustrated by numerous cuts. The English and Continental methods of procedure are especially well described.

The articles while technical and exact, are yet not of so abstrusely scientific a character as to prevent its perusal by other than professional men. An especially noteworthy feature is the list of the names given to the elements or compounds under discussion in Russian, English, German and Spanish languages, as well as their French synonyms.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. Correspondents will please remember this. No attention will be paid to anonymous communications.

Q.—J. da S. T. writes: I have remarked that children are most often represented in portraits much bigger and fatter than they are in reality. I understand that the child represented in your illustration issued with No. 7, Vol. 23, of BULLETIN, is an example of what I mean. I believe that the child is far from being so big and so fat as it looks. Is it because of the large diaphragm used for children's portraits and consequently due to aberration? But I myself have made two portraits of the same child, using the same diaphragm and lens, and one looked too big and fat and the other too little, small as the child is in reality. Or is it because of the difference of color between the background and the child's dress, and consequently irradiation? The child I speak of was first in a blue dress, and in the next picture in a grey one, in both cases the background being white. Or is it on account of the image on ground glass being larger in one case than the other, the sitter being farther from the camera at one time than the other? I will feel much obliged to you for an explanation in your BULLETIN.

A.—Size strictly speaking is only comparative. When a baby's picture is presented to

us that does not include anything of known dimensions by which to establish its true size, we involuntarily compare it to the ordinary size adult's head seen in a similar portrait. This naturally leads to the exaggerated idea of its size of which you speak, as, relatively, a baby's picture is much larger than an adult's. When taken in the arms of some older person this impression is not given.

Q.—A. A. S. writes: I have some stops for lenses that have become bright from use, and also some that I have made that I wish to color black, and any thing I have tried soon rubs off. Please inform me through your valuable paper, the BULLETIN, how it is done?

A.—A good way is to thoroughly clean the stops from all grease with washing soda, and then immerse them in a 10 per cent. solution of sulphuret of potash. The last-named material is purchasable at any druggist's. Allow the stops to remain in the solution for ten minutes, wash them in water and allow to dry; they will then be found to be thoroughly and permanently blackened.

Q.—F. W. H. writes: Can you give a list of good books on "Composition" generally, and specially in reference to photographic views, both elementary and more advanced?

A.—See H. P. Robinson's "Art in Photography," and a series of articles of similar character running in the pages of the BULLETIN at the present time under the title of "The Application of Art to Photography" by the same author. We know of no one better qualified to write upon this subject.

Q.—D. F. G. writes: I note in the U. S. Civil Service report that there is at certain times an examination in photography for departmental service at Washington. Can you tell me about what it consists of, whether practical, theoretical, or both, and would it cover the plate photography. Any information you can give me through the columns of the BULLETIN will be a great favor.

A.—We are unable to give you the exact character of these examinations or the ground that they cover, but would suggest that you write to Mr. T. W. Smiley, Smithsonian Institute, Washington, D. C., who, we understand, is in possession of the information you desire.

Q.—D. M. P. writes: Kindly answer in next issue of BULLETIN how the stops furnished with the Prosch Triplex Shutter fitted to an 8x10 Dallmeyer Rapid Rectilinear lens are classed as regards the scale on the Watkins' Exposure Meter, and also the times of

Carbutt's B 16's and Voegel's Eoside 25's D Plates. I find the largest stop furnished with the shutter is $1\frac{3}{8}$ inches, while Dallmeyer's 10 stop is $1\frac{5}{8}$ inches.

A.—Stops are classified with reference to the ratio between their diameter expressed in inches and the equivalent focus of the lens also expressed in inches. Your lens is catalogued as of 13 inches equivalent focus. A stop of $1\frac{3}{8}$ inches in diameter would therefore be classed as one in which the ratio between these two terms was as $1\frac{3}{8} : 13$, or approximately $1 : 9$ or $f/9$. The relation of the other stops to the focal length is similarly found. Carbutt's B 16 plate corresponds to a 5 times, and Vogel's Eoside 25 to a 15 times.

Q.—P. S. B. writes: In your issue of March 26, 1892, No. 6, Vol. 23, in your article on "Exposure Values," etc., the following proportion occurs :

$$\left(\frac{1}{10}\right)^2 : \left(\frac{1}{18}\right)^2 :: 2 : 4 = \frac{1}{100} : \frac{1}{324} :: 2 : 4 \times 2 \frac{2}{9} = \frac{2}{9}$$

I apprehend that "x" was written in the manuscript and mistaken for a 4. The proportion would then read :

$$\left(\frac{1}{10}\right)^2 : \left(\frac{1}{18}\right)^2 :: 2 : x = \frac{1}{100} : \frac{1}{324} :: 2 : x = x = \frac{200}{256} \text{ or } \frac{25}{32}$$

Otherwise, the proportion fails. Am I correct?

A. In the manuscript of the article to which you refer, the x was mistaken by the printer for a 4, and his error escaped the proof-reader. Where x occurred near the end of the line, it was mistaken for a multiplication sign, and the equality sign for a 2; making the curious combination of mistakes to which you kindly call our attention. The proportions should read as you suggest.

Views Caught with the Drop Shutter.

THE photographic studio of Mr. C. F. Somers, of Cleveland, Ohio, was almost totally destroyed by fire on the 4th of June last. The origin of the fire is unknown, but was supposed to be due to an explosion of chemicals.

THE PEERLESS BURNISHER COMPANY, of Syracuse, N. Y., recently filed papers of incorporation in the County Clerk's office of that city. The incorporators are: Edward M. Belden, James M. Belden, Walter S. Wales, Warren H. Boles, and Clarence V. Kellogg. The capital stock is \$50,000, and the company will engage in the manufacture of burnishers, polishers and photographic supplies.

Mr. ALLEN, the well-known photographer of Lowell, Mass., has recently opened a new studio at Waltham. This makes the third under his management, and we wish him success equal to his other triumphs.

WE have just received from S. H. Madsen, Sleepy Eye, Minn., some samples of his patent marbling process applied to cabinet photographs. They make a very effective mounting, and will doubtless meet with considerable approval from the photographic fraternity.

THE spring bargain-list of Mr. H. A. Hyatt, St. Louis, Mo., which we have at hand, contains many veritable bargains, and will repay the slight trouble of sending to him for it.

TABLE OF CONTENTS.

| | PAGE | | PAGE |
|--|------|---|------|
| ABOUT LICHTDRUCK, by <i>Adolf Beyersdorf</i> | 365 | OBITUARY—LEWIS MORRIS RUTHERFURD..... | 371 |
| AMERICAN INSTITUTE—PHOTOGRAPHIC SECTION..... | 379 | OUR ILLUSTRATION..... | 374 |
| "ARISTO" PAPER, by <i>Romyn Hitchcock</i> | 364 | PHOTOGRAPHY IN COLORS..... | 374 |
| BACK NUMBERS OF THE BULLETIN WANTED..... | 374 | SOME CONDITIONS INFLUENCING THE WELFARE OF PHOTOGRAPHIC SOCIETIES, by <i>W. H. Harrison</i> | 375 |
| BIBLIOGRAPHY..... | 382 | THE APPLICATION OF ART TO PHOTOGRAPHY.—No. 3, by <i>H. P. Robinson</i> .. | 368 |
| CHROMO-PHOTOGRAPHY..... | 378 | THE INTERNATIONAL UNION OF PHOTOGRAPHY..... | 380 |
| COLLOID-BROMIDE ORTHOCHROMATIC EMULSION, by <i>Col. J. Waterhouse, S. C.</i> | 377 | THE PHOTOGRAPHIC SOCIETY OF JAPAN..... | 380 |
| EDITORIAL NOTES..... | 356 | THE RAPID HYDROQUINONE DEVELOPER, by <i>Prof. Alex. Lainer</i> | 361 |
| LETTER FROM FRANCE, by <i>M. Léon Vidal</i> | 358 | VIEWS CAUGHT WITH THE DROP SHUTTER..... | 384 |
| LYNN CAMERA CLUB..... | 379 | WHAT OUR FRIENDS WOULD LIKE TO KNOW..... | 383 |
| MARINE PHOTOGRAPHY..... | 353 | | |
| NOVELTIES IN APPARATUS..... | 372 | | |

ANTHONY'S

Photographic Bulletin.

EDITORS :

PROF. CHARLES F. CHANDLER, PH.D., LL.D.

PROF. ARTHUR H. ELLIOTT, PH.D., F.C.S.

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No. 13.

METOL—ANOTHER NEW DEVELOPER.

THERE is nothing more remarkable in the progress of photographic manipulation than the rapid adaptation of organic bodies to the development of the latent image, either negative or positive. For many years our old friend pyrogallol ruled supreme, and was, practically, the only available organic substance suited to the development of photographic pictures. This state of affairs continued until hydroquinone was brought forward as a substitute for pyrogallol, not as something new, for it had been used before, but apparently fell out of favor. New conditions having been ascertained, hydroquinone came again to the front, and, even to-day, has many ardent admirers.

Hydroquinone belongs to a class of bodies allied to carbolic acid, that are called phenols by the chemist; hence, it is sometimes called quinol. A year or more ago, another organic body was adapted to the use of photography, but it belongs to a different class of compounds from hydroquinone. This body, called eikonogen, is really an amido-phenol, and was a most remarkable addition to our list of developing agents. It combines the phenol qualities of hydroquinone with some of the reducing properties of the derivatives of ammonia.

The discovery of the applicability of this last body to the uses of the photographer lead to the study of a large number of other closely allied organic bodies all of which exhibit some reducing powers. To this same class belongs para-amidophenol which has rapidly found favor, and is a most remarkable developing agent.

Closely allied to para-amidophenol another new developing agent claims our attention. Its chemical name is mono-methyl-para-amido-meta-cresol.

This may appear a dreadfully bad name and we have no doubt some of our ultra-practical friends will rail at us for being too scientific. Yet we are forced to admit that many of the readers of the BULLETIN not only want this information, but actually write for it. Our ultra-practical friends will therefore pardon us if we go into a little more detail, promising the practical part later on.

This new body is quite closely related to para-amidcphenol, whose character we explained some time ago. Starting with cresol, which is a body that is a phenol (like carbolic acid), the next product is amido-cresol, and further treatment gives mono-methyl-para-amido-meta-cresol, having the chemical structure $C_6H_3, CH_3, OH, NHCH_3$.

The plain practical name of this formidable-looking substance is "metol." At least, "metol" is the sulphate, hydrochlorate or oxalate of this substance.

It comes into the market as a whitish powder, soluble in water, and with sodium sulphite gives a colorless solution that keeps in closed vessels for weeks. Carbonate of potash or soda does not change the color of the fluid. It is a strong developer for bromide plates, and even with sulphite of soda and no alkali, it will develop chloride and chloro-bromide plates.

For bromide plates the following formula is recommended :

POTASH-METOL DEVELOPER.

| | |
|---------------------------------|-------------|
| A.—Neutral sodium sulphite..... | 100 parts.. |
| Metol | 10 " |
| Distilled water..... | 1,000 " |

| | |
|-----------------------------|------------|
| B.—Carbonate of potash..... | 100 parts. |
| Distilled water..... | 1,000 " |

For use, mix—

| | |
|--------|-----------|
| A..... | 60 parts. |
| B..... | 20 " |

This formula causes the image to appear almost instantly. Lacking in density at the beginning, it gradually thickens until the development is complete, which takes about three minutes. Density falls off in fixing and should be allowed for in the development. For soft pictures, use half the quantity of B given above and twenty parts of water.

The developer gradually becomes brown by use. Bromide of potassium acts as a restrainer when used in small quantity.

The following formula is given for:

SODA-METOL DEVELOPER.

| | |
|--------------------------------|-----------|
| A.—Metol..... | 10 parts. |
| Sodium sulphite (crystal)..... | 100 " |
| Distilled water..... | 1,000 " |

| | |
|--|------------|
| B.—Carbonate of soda (pure crystal)..... | 100 parts. |
| Distilled water..... | 1,000 " |

For use, mix equal parts of A and B.

It is rather slower than the potash mixture, but is suitable for portraits, instantaneous and landscape pictures. In keeping-qualities and color it is similar to the potash formula. For soft pictures, use one volume of the above mixture and half its volume of water; or mix A with half or quarter the volume of B.

Our own experiments serve to confirm all that the makers claim for this new compound. We are delighted with it, as it reminds us of the rapid development of the old-time wet plate without a developing dish, it is so energetic. Indeed, we are fast approaching the time when a dry plate can be developed with the same facility that was common with wet plates and the iron developer, when.

the simple flowing of the plate with the solution over a graduate was sufficient to produce a picture. This is so true that, while we write, Dr. Eder announces in the *Correspondenz* that "amidol," another of these new organic bodies, works in an acid solution, and produces pictures on dry plates without fog, alkalies being detrimental to its best action. As soon as we can obtain some of this remarkable body, the readers of the BULLETIN will learn more about it and its probable value in the photographic darkroom. At present, the substance has only fallen into the hands of a few workers, but the reports of its use are of full of promise.

EDITORIAL NOTES.

RECENT experiments instituted by Mr. W. H. Sodean with sulphite of silver show that, when kept in air-tight vessels, it is only slightly blackened by exposure to sunlight, after a lapse of a fortnight at ordinary temperature. When the temperature is raised, the blackening is more rapid; and when moisture is present, it is still more quickly effected. These experiments demonstrate the advantage of keeping the salt as dry as possible, and in receptacles as nearly air-tight as may be.

IT is advocated by several workers of the para-amidophenol formula, to substitute sodium carbonate for potassium carbonate, in conjunction with para-amidophenol chlorhydrate and sodium sulphite, as the latter is apt to retard the action of the developer. Dr. Schüchardt, of Prussia, recommends, however, the substitution of para-amidophenol nitrate for chlorhydrate and caustic soda instead of carbonate of potassium. We shall be glad to chronicle the results of experiments with these formulas.

THE Minneapolis Camera Club, which has lately organized, has elected the following officers for the coming year: President, W. M. Tenney; Vice-President, F. Channing Whitney; Secretary, A. L. Eidemiller; Treasurer, W. C. Porter.

AN excellent toning bath is said to have been obtained by M. Mercier, of Paris, by neutralizing gold chloride with sodium phosphate, and dissolving in water. The tones obtained are said to be of a very rich violet-black color.

WHERE tracing paper is not at hand and a design is to be copied, any ordinary opaque paper may readily be rendered transparent by rubbing its surface with benzine, which evaporates quickly, leaving the paper as it was originally.

THE annual excursion of the Camera Club of New England, on the 17th ult., was a great success, and participated in by a large delegation from the Eastern States. About one hundred enthusiastic members of the various clubs were present, and the day was one of complete enjoyment.

RYE flower is advised by some foreign correspondents as a substitute for wheat in the making of paste for gelatino-chloride and collodio-chloride prints, on account of its greater adhesiveness. It is easily obtainable, and might be tried to advantage.

WE are pleased to note that the Rockwood Photo-Ceramic Company, of New York, is about to institute a system of instruction in photo-ceramics. This is upon the principle that a general knowledge of an art always tends to its success, and the practice of photo-ceramics is one of the most artistic developments of photography. Mr. Rockwood realizes these facts, and, with his characteristic good sense, gives the fraternity an opportunity to profit by some of his experience. We heartily wish him success in his endeavors to develop a better knowledge of absolutely permanent photography.

AN unusual interest seems to be manifested in the coming photographic convention in Edinburgh, and it is expected that this year's meeting will be one of the most valuable on record.

THE fireproof building for the Harvard Astronomical Observatory, which has been so long talked of, will be erected this summer, and will be ready for use by November 1st. It will be 30 x 60 feet, and built of brick.

THE second annual convention of the Photographers' Association of Ohio will be held in Columbus, Ohio, August 10th and 11th, and bids fair to be a most successful and interesting meeting.

MR. CHARLES SIMPSON has very lately returned from a long and delightful trip on the Nile, and has brought home with him a large number of fine negatives. He complains, as do most travelers, of the treatment received at the hands of the over-zealous customs' officials, but, having been forewarned, did not suffer as much loss as do many who are less informed.

A VERY interesting print exhibition was given early in June by the Nashua (N. H.) Camera Club as a memorial to their first president, F. H. Merrill, lately deceased. A number of his views were shown, and the entire affair was a worthy tribute to one who had done as much as had Mr. Merrill for the good of the club.

THE fifth general meeting of the American Chemical Society is announced to be held at Rochester, N. Y., on the 16th of August, and members are requested to send early notice of papers to be presented at the meeting.

WE are in receipt, from Mr. Guy Smith, of Peekskill, N. Y., of a print from a negative made by lightning flash at 8 o'clock P. M., during a storm of rain, which is quite remarkable; it is not a picture of the flash, as is usual in such cases, but a clearly defined and brilliantly illuminated street scene, showing a hotel, the piazzas of which are filled with people. The detail throughout is surprising, every clapboard and shingle being clearly discernible, and the figures being distinctly visible and sharp in all the groups.

WE notice among the list of delegates to the late Democratic Convention at Chicago, the name of Mr. Adam Heimberger, Secretary of the Photographers' Association of America, who, besides being a photographer of enterprise, is a politician with lots of energy and ambition.

A VERY enjoyable lantern-slide exhibition was given on the 20th of June by the Orange Camera Club, consisting of some 150 views, many of which were of local interest and which were supplemented by a fine set of the Paris Exposition by Mr. Edward A. Graves.

WE regret to record the death of Mr. George Heyn, of Omaha, Nebraska, who was drowned in the early part of last month while on a journey to Detroit. He was a well-known dealer among the western photographers who, with us, sympathize with his family in their bereavement.

WE have before us a copy of the rules and list of members of the Foochow Camera Club for 1892, which is neatly printed and bound, and reflects great credit on the organization. The club is devoted to the interests of all foreign resident amateur photographers in China and has a very considerable membership.

E. VALENTA has wrought some improvements in his original method of heating sulphur and asphalt. He now boils in a vessel connected with an inverted condenser, 100 grams of crude Syrian asphalt and 100 grams of pseudo cumol, in which latter he has first dissolved 12 grams of flowers of sulphur. This solution produces sulphureted hydrogen, which is noticeable for three or four hours. After distilling off the cumol, the residuum is dissolved in benzol. Too much heat is to be avoided, as otherwise the asphalt will be too hard and insoluble.

MR. W. H. HARRISON, in experiments with manganese salts, has obtained some very interesting results by coating paper with manganous chlorate and exposing to the sun; he deposits on the paper an oxide of manganese. The action of the sun in blackening the solution is very slow, and, with a second application of the sensitizing solution after the first is dry, will probably be more vigorous. The color of a print so obtained is dark brown, and the solution, if neutral, will work more quickly than otherwise. The composition of the solution was worked out by Mr. Harrison by the double decomposition of sulphate of manganese and chlorate of barium, under the following formula:

| | |
|----------------------------------|------------|
| Sulphate of manganese, pure..... | 80 grains. |
| Chlorate of barium..... | 120 " |
| Water, distilled..... | 1 ounce. |

After careful mixing and rubbing together, the milky solution is allowed to settle and the clear liquid applied with a brush.

WE note with pleasure the appearance of "The Photographic Pointer," a little newsy trade journal issued in the interest of the publishers of the BULLETIN and the fraternity. It is a capital epitome of the latest novelties in photographic apparatus and materials, and its get-up reflects great credit on the editor, Mr. W. I. Scandlin. Send to our publishers for a copy and have your name on their list; you will be pleased to keep a file of these pointers handy for reference.

All communications for the columns of the BULLETIN should reach us on Monday preceding the day of issue, to insure their publication at that time.

LETTER FROM GERMANY.

BY DR. H. W. VOGEL.

Photography in the Natural Colors by the Collotype Process.—Variation in the Sensitiveness of Dry Plates.—Lippmann's Direct Process for Making Photographs in Natural Colors.

THE principal event of the day is the exhibition of natural color Lichtdruck pictures (Collotypes in natural colors) after the process of Vogel, Sr., published in 1885, and practically introduced by the chromo-lithographer, Ulrich and Dr. E. Vogel. The process is under the patronage of Mr. Pachter, who deals extensively in works of art, and who has formed a company for Lichtdruck in natural colors. The reports of all the larger journals are very enthusiastic about this, and the same may be said of professionals. Your humble servant being one of the originators in this matter, he will have to let others speak. The *Staatsanzeiger* (official organ of the Government) says: "Two ways have been pursued to attain a solution of the highest problem of photography: Photography in natural colors.

"*First.*—Direct views by means of photographic films, which are sensitive to all colors and reproduce the action of each color in the original color. To these belong the experiments of Seebeck (Goethe's structural color system, 1810),* Becquerel, Niépce de St. Victor, Poitevin, Zenker, Lippmann, etc."

This method has the defect, that the reproduced color, for physical reasons, does not resemble exactly the natural color; further, that it admits only the taking of incandescent bodies (spectrum and colored glasses by electric light), and that every new picture requires the taking of a new view.

"*Second.*—Views taken by making use of the color-print principle, multiplication being thus made possible."

This second way was proposed by Ransonnet in Austria, and Collen in England, 1865; they required the production of three views from the same colored object through red, yellow, and blue glass. Thus, three negatives were to be produced, in which on one of them only the red, on the others only the blue and yellow rays had acted. These were to be copied upon stone, and the photo-lithographic stones so obtained in yellow, blue and red were to be applied, printing on the same sheet of paper.

The idea was not practicable because red and yellow sensitive photographic plates were not known.

Such plates were first invented in 1873, by Dr. H. W. Vogel in Berlin, and Cros, Ducos de Hauron, in France, and, a little time later, Albert, in Munich, took up again the idea by using the plates made color-sensitive after Vogel's principle. Albert applied the so-called Lichtdruck (better, photo-gelatine process) in place of lithography, by which process the photographic negative is copied upon a glass plate covered with light-sensitive chromated gelatine. This will then show a plate, which can be printed from, in black or in color, as in lithography.

But in the choice of the printing ink there were some peculiarities. Every ordinary (black) photographic picture, as is well known, is printed upon paper becoming black by the action of light, from a negative plate, upon which black has not acted. Analogous to this, a negative plate is used in the natural color Lichtdruck process for the production of the copy in yellow, upon which yellow has not acted; for the production of the copy in red, a negative plate upon

which red has not acted. In short, the printing inks and the natural colors, which acted upon the corresponding negatives are in direct opposition. Thus the conclusion was arrived at, that the red-sensitive negative plate was to be printed in the complementary color, green, that for yellow in the complementary color, blue, etc. This was, indeed, an approach towards the natural color, but it was by no means the actual, natural color.

The deviations were under circumstances of such a kind that the pictures became, artistically, completely valueless. Prof. H. W. Vogel proved in 1885 the reason of this fault to be such that the definition "complementary colors" is variable to a high degree—that one and the same color can even have many complementary colors, from which the printers might select those which they thought the most suitable.

H. W. Vogel set aside this arbitrary action by establishing a simple rule. For the production of the above mentioned, three or more color-sensitive plates (for views behind red, blue or yellow glass), colored by certain light-sensitive coloring matters are necessary, which absorb corresponding red, yellow, green or blue light. Exactly the same coloring matters, or some resembling them spectroscopically, have to be taken as printing inks, according to Vogel's rule, to obtain prints resembling nature.

Mr. Ulrich, the chromo-lithographer, was the first one to prove, practically, the correctness of this principle. He exhibited at the Berlin Amateur Exhibition in 1890 Lichtdrucks made that way, and in 1891, at the German Exhibition in London, where he obtained the first prize.

About the same time, Dr. E. Vogel, Jr., took up this matter, and obtained results by application of new plate colorations, which he prepared himself; also, by application of new corresponding colored ray filters in place of the colored glass plates, which always change in their coloration, which surpassed all previous ones.

In consequence of this, and in consideration of the importance of the matter, the Society for Lichtdruck in Natural Colors took the further development of the process in hand, and appointed Mr. Pachter, of the firm of R. Wagner, as manager. The society, after having reproduced to the satisfaction of the originators the best masterpieces of Mengel, Knaus, Graeb, Auvasovsky and Breitbach, has now placed its products in the market. The significance of the process is clear. The results of painstaking efforts of the chromo-lithographer, after months of hard labor, by using sometimes twenty and more stones, can be accomplished now by the new process in eight days and with only three plates.

The process is, of course, not only for Lichtdruck (photo-gelatine print), but is also applicable for photo-lithography and photo-zincography (book-printing), and by the latter a new era may be introduced for book and newspaper illustrations in natural colors. Oil paintings, which heretofore could be only reproduced in black, will henceforth be offered to the public in natural colors.

The following expresses the opinions of eminent photo-lithographers and helio-typers here, as given in the report of the Society for the advancement of Photography, May 20th :

Herr Gaillard finds the proofs above praise, and is surprised that with the three colors presented, an effect is to be obtained which before was only practicable with the aid of from 18 to 24 plates. Herr Otto Rau, a practical artist, is of the opinion that we have a photographic event of the highest importance before

us; failure would be out of the question after such accomplishments, and he congratulates the inventors. He desires to know the average time for these views. Herr Dr. E. Vogel says that for landscapes from nature, with good light and small diaphragm, which require, ordinarily, two seconds, all three views can be made in 62 times the time of exposure. A clear time of exposure of about two minutes only was therefore necessary. To this might be added the few moments for changing the plate-holders and ray filters. Herr Gaillard thinks it to be interesting in view of the joyful event to recall the historic development of natural color printing. He calls attention to the experiments of Joseph Albert, Sr., the process of Obernetter, Von Hoesch, and the one applied by Troitzsch, where the work of the artist was oftentimes spoiled, while here photography does everything. These remarks met with general approbation. Herr Rentschmid, artist and chromo-lithographer, cannot suppress his surprise that prints true to the original are shown here, which were made with three, properly only two, colors (the yellow giving no depth), which otherwise could be obtained only with twenty colors. Chromo-lithography has arrived at a turning point. As the present process furnished plates ready for printing in two or three days, while it took the chromo-lithographer four to five months to finish by using about twenty plates, the competition was great, particularly as good and faithful reproductions are to be expected here. In the meantime, the correspondents of the *New York Herald*, and of the *Standard* (London), have visited the exhibition and have expressed their opinion about the matter in the most favorable terms.

A strange fact, perhaps also observed by others, but at present investigated by Dr. Wolff, in Heidelberg, and published in Eder's "Year Book," is the change of sensitiveness of dry plates. Wolff says:

The knowledge of the sensitiveness of the plates is for no photographer of so great importance as it is for the astral photographer. If suitable, the regular photographer simply takes off the cover of his lens, closes it again, and the thing is done. If the exposure was too short, he will take another view of longer exposure.

It is quite different with the astronomer. The principal work for him is from the time he takes off the lens cover until he shuts it again. Between that time—frequently hours—he has to direct his camera with the greatest attention by hand after the moving stars, on account of defective motive power or machinery. The meaning of this is certainly known to all who have tried it.

That, under such circumstances, a very sensitive plate is welcome to the astronomer can easily be imagined; it shortens his severe labors.

But the case becomes bad if a good sensitive plate is supposed to be in the holder and it is discovered after an eight or nine hours' exposure, when developing, that the whole work was in vain, because a non-sensitive plate had been used.

If this happens to one, he will, of course, be more careful the next time. But the only reliable means to test the sensitiveness are comparative star views; the usual sensitometer tests are not certain enough for our purposes.

Particular care should be paid to fresh plates. Formerly, when I received plates from the manufacturer, I always made the observation that the new plates were not so sensitive as the previous ones, and that I had to expose much longer than before, so that it almost appeared as if the manufacturing of dry plates was in the decline.

For astral photography I used principally plates of Lumière, Schleussner, Biernaert and Wratten and Wainwright. All these showed a visible decline, Lumière's the most, Schleussner's plates not so much.

The result is so striking that last winter, even at three times the exposure, I hardly received the shadow of celestial objects on the new plates which I succeeded in obtaining quite well on plates previously received. Stars and nebulae, which I had photographed before with great facility in one hour, I did not obtain even after three hours' exposure.

True enough, I had already known before that the plates, when kept in stock, change their sensitiveness somewhat, but that the sensitiveness would increase three times I could not expect. And still it was so. The same plates, in the beginning so insensitive (Lumière), became just as sensitive as the previous ones after five months, and finally surpassed all my other plates in sensitiveness.

The same was the case with other kinds of plates. The orthochromatic plates appear to be less subject to this change of sensitiveness.

But the additional sensitiveness increases by no means more and more with time. It will soon reach a maximum upon which it rests for some time. Later on, all plates will decrease again periodically in sensitiveness.

From this, the rule might be drawn that each brand should be tested to its highest point of sensitiveness.

For Lumière plates it might be the fifth or sixth month after manufacture. Much can be gained if regard is had to this; under the circumstances, as aforesaid, three to four times the sensitiveness. Whether the duration of this ripening time remains always the same with the same manner of production is not very probable, and remains questionable.

The astronomer should therefore be on his guard, and should never be too certain that plates of the same emulsion, used at different times, are equally sensitive. The sensitiveness changes according to the time when the view was taken. For this reason it is also very difficult to determine beforehand a definite time of exposure with which certain stars are to be obtained. This is, aside from the changes in the character of the atmosphere, for the above reason not easily executed if the age of the plates is not at the same time exactly considered.

It is natural that the printing processes for the production of photographs in natural colors, which are now placed successfully on the market, recall attention to other above-mentioned processes, above all, Lippmann's. At the beginning of the year I proved that the pictures of the spectrum, taken directly upon bromide—or chloride—of silver cannot furnish absolutely correct natural colors (*Photogr. Mittheilungen*, XXVIII, p. 205). Krone's investigations in this direction I have now experimentally confirmed. Krone has repeated Lippmann's investigations, and says:

"1. For the success of the experiment altogether a thoroughly homogeneous film is indispensable, and the existence of a reflector in contact with this, whose reflected rays interfere with the direct entering rays of light and produce reinforced waves in the film.

"2. If the picture film exceeds a certain thickness, the colors do not give expression in the spectral parts in question, or are differently colored, and are therefore in other wave-lengths. Everywhere, where the regular film has

run around a dust particle that floated in it in the shape of a comet, and has dried in that condition, spots of different thickness of the film have formed, and permit all kinds of variations.

"3. The truthful and locally correct appearance of the color belonging to the spectral regions in the final photographic result is not absolutely, but relatively and exceptionally dependent on—

"(a) Very exact favorable harmony of the silver haloid, distributed very finely in the film with the color sensitizer and its adjustment.

"(b) The degree of heat when drying the film.

"(c) The time of exposure when the photographic view of the spectrum is taken.

"(d) The development."

Thus it may happen, that, by less favorable harmony among the above-mentioned factors, green may appear in the region of the blue, or yellow in the red, etc. This is also the reason that quite surprising appearances of an apparently anomalous color-dispersion appear sometimes in the result, that some color is not present, that green passes directly into violet, etc. Therefore, the wave-length of the entering color ray will excite only the same wave-length under fully determined conditions in the reinforced waves produced by interference with their analogous reflection. If these conditions do not agree, waves of other wave-lengths will appear.

BERLIN, JUNE, 1892.

[By Our Special Correspondent.]

ENGLISH NOTES.

AMONG other signs of the growing importance of photography is the publication (by Cassell & Co.), of a volume of "Recollections" by that veteran in the art, Mr. Vernon Heath. As the nephew of a man who, half a century ago, presented a large and very valuable collection of modern paintings to the National Gallery, Mr. Heath enjoyed great advantages; and the story of his life's work leads us often among the aristocracy, to whose seats in various parts of the British Isles, Mr. Heath and his camera appear to have been a frequent and welcome visitor. My own recollection of the fine landscapes exhibited in his studio window in Piccadilly, goes back quite thirty years, but, even then, Mr. Heath was a veteran photographer, for he bought his first camera and lens from Andrew Ross in 1842. Some of Mr. Heath's negatives became valuable properties. He tells us of three in particular. "I recollect two negatives that I obtained in 1862—one at Cookham, the other at Roehampton*: the former, the horse-chestnut tree at the angle of the backwater; the latter, the porch of a cottage at Roehampton vale. I mention these two subjects because they realized far and away greater sums than have any other two photographs—the horse-chestnut tree close upon \$8,000, the Cottage porch nearly \$10,000. A negative taken at Sandringham, in 1864, of two Indian mastiffs, the property of the Prince of Wales, brought nearly \$5,000." Much of Mr. Heath's out-of-door work was done on 10 x 12 plates, and from these he made transparencies in the camera, enlarging them to 53 x 43 inches. Then a negative was made from the transparency, and finally this was printed in carbon. There are many interesting anecdotes, too,

* Lovely little village on the Thames.—T. A.

of famous painters and artists in this book, and Americans will read with special pleasure the account of the copying (life-size) of Lord Albermarle's fine portrait of George Washington, for the Massachusetts Historical Society, in 1874.

Users of dry plates or films often complain of the deterioration of these after keeping for a few months. Such deterioration is usually evidenced by a discolored bluish margin to the sensitive surface. But properly made plates kept under proper conditions will keep good for years. In pure dry and cool air the bromide of silver embedded in gelatine will remain unchanged. We should therefore try to approximate to such conditions as nearly as possible. Don't store your plates on a shelf near the ceiling (the most impure air will usually be found there) nor, if possible, in a room where gas is burnt. But the best plan is to wrap each package of plates or films in a double coating of tin foil, or the thin lead foil such as tea chests are lined with. Many persons are deterred from buying a good batch of plates at a time, because they fear they will go bad; but by adopting this plan they may feel quite safe.

I have now been able to give the new dry-plate named the "Sandell" (after the able manager of the firm of Thomas & Co., by whom these plates are manufactured), a through trial, and they certainly mark a new and very notable departure in the art of plate making. The plate is first coated with a slow emulsion; and then it receives further coatings of more rapid emulsions, the most rapid being on the top. We now have a plate so opaque that halation is annihilated; but we also have a plate which possesses enormous latitude of exposure. If the exposure is very short, then the top (rapid) film receives it; if very long, then it is appreciated by the slow layer in contact with the glass. Clearly, these are the plates for beginners and for every one who feels shaky in the matter of exposures.

Conversing recently with a plate-maker of great experience, I was rather surprised to learn from him that by the addition of erythrosine to the emulsion, it was possible to dispense with some of the silver. This would appear to show that isochromatic plates ought to be at all events not dearer than ordinary plates. Some support would seem to be given to this theory by the fact that the Ilford Company have recently reduced the price of their medium isochromatic plates to the same figure as their ordinary plates.

I think it probable that many "camerists" (that's the latest name for "shadow-fakers") are also lovers of Shakespeare. They will be able to admire in a dual capacity the exquisite photo-mechanical reprint in fac-simile of the great edition of the poet's works which was published in 1623, and which (the reprint) is now being issued by Mr. Duncan C. Dallas, of 5 Furnival street, Holborn, London. The original is in the British Museum Library, and is worth a small fortune; but the cost of the reproduction is only about twenty dollars.

Mr. A. Werner has recently described the method of toning with platinum such gelatino-chloride papers as aristotype. Print to the desired depth, wash well, and then tone in the following bath:

A.

| | |
|--------------------------------|-----------|
| Potassium chloroplatinite..... | 1 dram. |
| Distilled water..... | 2 ounces. |

B.

| | |
|----------------------|-----------|
| Oxalic acid..... | 10 grams. |
| Distilled water..... | 3 ounces. |

To make the bath, add half an ounce of A to B; this quantity will suffice for

six whole-plate prints. Afterwards wash in water to which a little carbonate of soda has been added; fix in hypo, and wash again as usual. We wonder how many of those who use a camera with tapering bellows (and nine out of ten cameras intended for out-door work are now made of this pattern) ever give a thought to the inventor, Mr. Kinnear, who gave the idea free to the photographic world in 1857. Mr. Kinnear is at the present day a leading Edinburgh architect. Among the firms in this country who make a point of selling photographic apparatus at popular prices, a leading place is taken by Messrs. James Lancaster & Son at Birmingham, whose advertisement remarks "upwards of 75,000 cameras sold." The present head of the firm, Mr. W. J. Lancaster, is a member of the local Town Council, and is a candidate for a seat in Parliament at the coming general election. The figures just quoted will give some idea of the wonderfully rapid spread of photography in this country; and Mr. Jerome Harrison's estimate (in his paper recently read before the Photographic Society of Great Britain) that the number of photographers in the British Isles is about a quarter of a million, is probably well within the mark.

The following exposure table, issued by a well-known firm (The Paget Plate Co.), gives some idea of the rapidity of the plates now used on "this side."

"Good summer light. Sun shining. Midday.

"Near view with foliage, or dark objects or shadows in foreground. Portraits and living objects out of doors.

| STOP. | ORDINARY. | RAPID. | EXTRA-RAPID. |
|----------|-------------------------|-------------------------|-------------------------|
| $f/8$. | $\frac{1}{16}$ seconds. | $\frac{1}{20}$ seconds. | $\frac{1}{32}$ seconds. |
| $f/16$. | $\frac{1}{4}$ " | $\frac{1}{5}$ " | $\frac{1}{8}$ " |
| $f/32$. | 1 " | $\frac{1}{5}$ " | $\frac{1}{2}$ " |
| $f/45$. | 2 " | $1\frac{3}{5}$ " | 1 " |

"More open view, river and beach scenes, sports, etc., one-third to one-fifth the above.

"Marine, distant or very open view, etc. One-fifth to one tenth.

"Sea and sky. One-tenth to one-twentieth."

I should be glad to know how these exposures compare with those given in America. I think that I have remarked before that I believe over-exposure to be the besetting sin of many workers at the present day; the fact is that we can hardly bring ourselves to believe in the marvelous rapidity of the modern dry plate. Next to this (as a mistake) comes under-development. It is not sufficient to see all the details out upon the surface of the plate in the development dish; time must be given for these details to strengthen themselves and to sink in. With most makes of plates the main outlines of the image should be distinctly visible on the back of the plate, and the film surface be all gray and black before sufficient density is obtained. The ordinary plate loses strength in the fixing bath, just like a silver print; but I find that this tendency to weaken is much less with orthochromatic plates.

The interest in the Chicago Exhibition increases here daily, and I feel no doubt of its being the most magnificent show of modern times. Among those who "want to be there" is

TALBOT ARCHER.

RELATIVE BEHAVIOR OF DEVELOPER AND SENSITIVENESS IN GELATINE DRY PLATES.

BY J. VON NORATH.

WE are indebted to the continual exertions of German as well as foreign photo-chemists for a number of new developing agents, of which some have met with a very good reception. But it cannot be denied that the endeavors for improvements unfortunately lead oftentimes to negative results. This experience we have made principally with many alkaline developers. One is almost accustomed at the present day to a plate working foggy, and it is considered not at all surprising that most negatives are extremely soft. The great demand for gelatine papers, which furnish strong prints, is ample proof of this. Gradually, by force of habit, this is looked at as something unavoidable. But if an opposite opinion is expressed exceptionally, the fault is ascribed in ninety-nine cases out of a hundred to the plate or to the light, and a return of the good old collodion time is wished for. Idealists expect, therefore, from the new collodion dry plate the beginning of a new era in photography, whereas their opponents remain silent without expressing an opinion, as this might be more dangerous than to touch a wasp's nest. But in spite of this very little tempting expectation, we assert that the above-mentioned bad properties of the modern dry plate have their cause only in the unsuitable proportion between sensitiveness and developer.

The sensitiveness of chemical preparations for white and colored light has its limit, as is well known. Beyond this limit there is no more action, under "ordinary circumstances." But this limit may be transformed by changing the preparation so that the light, applied in the same manner, produces an entirely different effect. This fact is of great importance, particularly for the production of a latent picture, and governs the production of a negative of a certain character. It is sufficiently known that light rays of various colors act very faintly, some not at all, upon bromide of silver of little sensitiveness, while others exercise a much more powerful action under the same circumstances. By increase of the sensitiveness this difference is considerably reduced; highly sensitive plates will work, therefore, soft; while less sensitive ones will work hard.

But the sensitiveness is in the closest connection with the developer to be applied. The reduction of the bromide of silver is introduced by exposure and an addition of alkali. The strong alkaline developers are based upon this fact in the principle of energetic development. But it has been proven now practically, that to obtain a good negative, developer and sensitiveness of the plates have to be in a reversed relation to each other.

It is therefore foolish to apply a so-called rapid developer for the highly sensitive plates of the present day, only to reduce the time of the exposure to a minimum. As already above stated, all possible fogs and flat negatives are to be looked for in this source of defects.

For practical purposes, it is worth remarking that each developer shows its peculiar properties arising from the exposed bromide of silver showing an almost similar behavior towards the different reducing agents, as well when unexposed as towards light rays of various colors. Eikonogen, for instance, will produce, under equal conditions, details which would be wanting by application of the oxalate developer, while hydroquinone, in the same case, would show a

a characteristic hardness. Every developer is, therefore, not suitable for all cases and all kinds of plates, and for that reason a certain preference for the iron developer is not to be disregarded.

Still it would be out of place to designate the oxalate of iron developer as *ne plus ultra*. On the contrary, there are cases in which the new developers may become indispensable, but then an exact knowledge of their properties and actions is necessary to moderate the action when required. It might be asserted that by modification of the developer errors of exposure can be corrected, the same as mistakes in the reproduction of the color value can be corrected with color-sensitive plates. This is arrived at by a combination of several developers and suitable additions.

The developers used for combinations are, to the present time, eikonogen, hydroquinone and pyro. Judging from experience, that eikonogen, by itself, produces too soft negatives, it was expected that eikonogen and hydroquinone, united in corresponding proportions, might furnish a more favorable result. This proved to be correct, and it depends only upon a correct composition to produce a developer which meets all requirements. This problem is not quite so easy, because the new developer must be : 1, durable ; 2, applicable for time and instantaneous exposure ; 3, work without fogging on even highly sensitive plates, and be, 4, not too dear.

These properties we find united in those developers, which, as basis, contain hydroquinone and eikonogen; corresponding additions of bromide of potassium and prussiate of potassium are to be made to obtain strength and absence of fog. The penetration of the deepest shadows is, even under unfavorable circumstances, astonishing.

The same effect, as obtained with these mixed developers, could be obtained by pyro alone; but the fact that it can be used only once, and its strong tendency to give the film a yellowish green color, push it considerably in the background.

Of the additions mentioned to the mixed and simple developers it is particularly the yellow prussiate of potassium, which is generally employed. It is said to increase the strength of the negative to be produced and acts anti-foggy on instantaneous plates; it finds its most excellent application with eikonogen. Another addition is chloride of sodium, which is recommended a good deal lately. Formerly, it was believed that chloride of sodium exercised a retarding influence; that is, that it reduced the original sensitiveness of the plates, hence its presence in oxalate of soda and potassium was looked on as undesirable. But according to Andra's tests, chloride of sodium has proven to be more accelerating than retarding, or, at least, rather indifferent. Added to the pyro developer, it is said to modify the effects of the same considerably.

According to the *British Journal*, the following developer is said to have given very good results :

| | |
|--------------------------|------------|
| Pyro..... | 0.3 grams. |
| Sulphite of soda..... | 1.3 " |
| Caustic soda..... | 0.3 " |
| or | |
| Caustic potassium..... | 0.5 " |
| Chloride of ammonia..... | 0.5 " |
| Water..... | 6.0 " |

The plates developed in this developer have given only monotonous negatives which, by application of bromide of potassium, became strong, handsome

and glass-clear. That the chloride of sodium which formed has resulted in an accelerating influence, is not evident; that it is not indifferent in the developer, has lately been proven by tests of J. Riesenköning, Jr. He uses, as developer, oxalate of iron, to which he adds a quantity of boiled milk. The result was the same as the information given in the *British Journal* about chloride of sodium. A counter test with a weak solution of chloride of sodium gave the same results. It may therefore be accepted that the small quantities of chloride of potassium contained in the milk, exercise a remarkable influence.

A likewise retarding influence is, according to Dr. Lohse, exercised by resorcin. He recommends the same, therefore, as an addition to the hydroquinone developer, partly to avoid monotony and fog, and partly because it has proven to be a preserving agent in the developer. The addition, however, should not be more than 0.4 gram to one liter of developer. But it should never be forgotten with all developments of time and instantaneous exposures, to employ a much harder working developer, the more sensitive the plate is. The old prescription of dilution with water is, with eikonogen, very doubtful. The development lasts in this case unusually long, and still the result is not correspondingly good—only a bromide of potassium addition is of help here. If, however, a mixed developer is used, the difficulty is passed much easier, and in this case a negative is obtained with old developer and addition of new as desired.

The fact is, at all events, significant, that in many galleries the old oxalate developer is still predominant. The great reproductive power of the new alkaline developer gave, in connection with highly sensitive plates, a result which was not desired. Since the introduction of the mixed developers there is a change in this, of course. For those who consider harmony in photography as secondary, a pretty close study of the different developers might be a compensating task. The gray, monotonous pictures as seen so often nowadays, will then certainly disappear entirely.

THE TONING ACTION OF ALUM HYPO-BATH ON CHLORIDE PLATES.

BY DR. LEO BACKELAND.

In 1889 I made a communication to the "Association Belge de Photographie," concerning the toning action of an alum hypo-bath on chloride plates.

By this method the developed plates are left in a fixing bath obtained by mixing equal parts of a 10 per cent. alum solution and a 15 per cent. hypo solution. The toning action of such a bath is a very slow one, and, as it takes several hours before being finished, the plate can be left in it without any further precaution. After a few hours the black tone of the image has become yellow, then red, then purple, and finally of a beautiful violet.

Bromide plates can also be toned in this alum hypo-bath, but the action is very much slower, and they never show such agreeable tones as can be obtained with chloride plates.

Prints on bromide or chloride paper obtained by development, when submitted to the same treatment, show also a change in color. For paper, the above-described toning bath should be treated with three times its volume of water. The tones obtained on paper are never so brilliant as those obtained on

chloride plates. Rev. J. Coupé, in his recently published book on lantern-slide making,* referring to this new method of toning, says: "The tone obtained by this alum hypo-bath is so beautiful that we ask ourselves how it would be possible to obtain them by any other process."

I have in my possession some plates toned by alum hypo since 1889, and they have not undergone the slightest change in color. As the process is now, I consider it merely as a curiosity, because its action is really too slow to be of any regular practical use.

The toning action of alum-hypo seems to be due entirely to the formation of sulphur, and this gives it a great similarity to the so-called combined toning and fixing bath as actually used for aristotype printing.

Indeed, if a solution of alum is mixed with another solution of hypo the result is a milky mixture in which sulphur is set free, and probably this sulphur combines itself with the silver of the picture, producing in this way silver sulphide, or perhaps a more complicated chemical combination.

That such a reaction is possible, is clearly shown, for when a piece of silver is placed in the alum hypo-bath it becomes entirely black after a few days, and, before the final result it is covered with red and violet iridescence.

Messrs. Dettaille have published† the results of the interesting chemical researches to which they have submitted this process, and have shown conclusively that the toning action of alum hypo is certainly due to the free sulphur which is set free slowly, but continually, by such a bath. This reaction is very curious on account of the extreme slowness with which the sulphur is eliminated, and it may continue for several months. The precipitate produced by such a bath is not exclusively sulphur, but contains also some aluminum-hydroxide. The chemical analysis of this precipitate gives the following composition:

| | |
|-----------------------|-----------|
| Aluminium oxide | 28 |
| Sulphur | 38 |
| Water..... | 34 |
| | <hr/> 100 |

[*Journal of Photographic Society of Great Britain.*]

RELATIVE EXPOSURES FOR VARYING PROPORTIONS OF IMAGE TO THE ORIGINAL.

BY W. E. DEBENHAM.

WHEN an enlarged photograph has to be made either from a negative or print, it is commonly understood that the greater the degree of enlargement, the longer will be the exposure required, but I have generally found only the vaguest ideas to exist as to the amount by which such exposure has to be prolonged. Sometimes, indeed, it is assumed that the exposure will be direct inverse proportion to the area covered, so that a copy of twice the linear dimensions of the original—covering, as it does, an area of four times the size—would require an exposure of four times that sufficing for a copy of the same size. This calculation, however, omits to recognize an important factor, and leads to serious error; the actual exposure required in the case mentioned (assuming the same lens and stop to be used) being not four times, but two and a quarter times that of a copy of same size; while, when we come to high degrees of

* *Méthode pratique pour l'obtention des diapositives au gélatino-chlorure d'argent.* Par l'Abbé Coupé. Paris: Gauthier-Villars.

† *Bulletin Association Belge de Photographie*, 1891.

TELEPHOTOGRAPHY.*

BY COL. J. WATERHOUSE, S. C.

ONE of the most important contributions recently made to the optical appliances of the photographer is, without doubt, the new telephotographic lens, which, curiously enough, has been brought out almost simultaneously by three noted opticians—Dallmeyer in London, Miethe in Potsdam, and Steinheil in Munich, and, I believe, there is a fourth in France. This may be taken as a sure sign that the want of a lens of the kind was generally felt. So many cases occur in practice, and especially with the small hand cameras now in vogue, where the whole pictorial effect of many subjects is lost by the very reduced size of the photographic image. If the subject be approached near enough to give a large image, then the point of view may be quite unsuitable for good pictorial effect, as is often the case with boats and shipping. Something may be done to remedy the defect by the use of long-focus lenses, but even with these, although the extension of focus may be considerable, the enlargement of the image is insufficient. A lens, therefore, which will, without any undue elongation of the camera, permit of a highly enlarged image being taken with a reasonably quick exposure, must of necessity be a very valuable addition to the resources of the photographer and enable him to obtain good pictures of subjects which would be hopeless under ordinary conditions. Combinations of the kind have been used for astronomical purposes for some years past, but apparently the idea of a specially constructed lens suitable for ordinary everyday photographic work is new, and certainly such lenses have not hitherto been generally obtainable.

As was pointed out in the *British Journal of Photography* many years ago, enlarged images can quite easily be obtained by employing a concave lens in connection with an ordinary single or double combination photographic lens, or an astronomical (negative) eyepiece may be used. An arrangement of this kind was made up in the Surveyor-General's Office, Calcutta, in 1874, and used for photographing the transit of Venus. The negatives have unfortunately been destroyed, but the prints are fairly sharp. Some recent trials with ordinary photographic lenses used with a concave eyepiece taken from an opera glass, show that a considerable amount of enlargement can be obtained by this means, and though the images are not quite sharp, they are sufficiently so for most practical purposes, and in many cases this simple means of obtaining details of objects at a great distance would be very valuable. The apparatus used in these experimental trials was somewhat rough, and consisted in a sort of extended wooden tube-front attached to the camera and carrying at the outer end of the concave eyepiece, or a negative eyepiece. Over this, another wooden tube was arranged to slide, and the photographic lens was fixed in front of this tube so as to be central with the enlarging eyepiece. The size of the image on the focusing glass is regulated by the extension of the main camera bellows and the power of the eyepiece, sharpness of focus being obtained by an adjustment of the distance between the photographic lens and the enlarging eyepiece. It was found that the visual and chemical foci of the arrangement did not agree, and it was necessary to set the focusing screen a little forward from the best visual focus. The trials were made on a church tower of upwards of 1,000 yards distance, and some of the pictures with a total extension of camera of not more than 30 inches, give an enlargement of nearly twenty-seven times, in which every detail of the tower, the ornamentation of the cross, and the lightning conductor above it, are all as clearly to be made out as if the pictures had been taken a few yards off. On a negative taken with the same lens, used in the ordinary way, the tower is quite small, and all details perfectly indistinguishable. On the enlarged picture taken with the concave eyepiece, the tower nearly fills a quarter-plate. The image is somewhat thin, and a comparatively long exposure was required—about half a minute to a minute. The results thus obtained, though probably nothing like so

* From *Journal of Photographic Society of India*, with author's corrections.

good as they would have been with a properly constructed telephotographic lens, were sufficient for showing the value of the method for obtaining detailed pictures of distant objects, and that in some cases it may be an advantage to photograph from a distance rather than from close by. For instance, pictures of richly ornamented details on a high cathedral tower could in this way be taken from a distance with a very low angle of elevation for the camera; whereas, by going closer, considerably more tilting would be necessary, and there would be more distortion. The negative eyepiece also gives a good enlarged image, but it is difficult to avoid spots and markings due to the simultaneous enlargement of the image of any dust spots, scratches, etc., there may be on the surface of the enlarging lens. It is needless to say that for military and reconnoitering purposes the new telephotographic lenses are likely to be of great value. With an apparatus that is perfectly portable and manageable, highly enlarged pictures can be at once taken of distant objects, fortresses, camps, bodies of troops, etc. For photographing animals the new lenses should also be particularly useful in enabling pictures to be taken at a sufficient distance to avoid disturbing or frightening the subjects.

It cannot be expected that the new lenses will be useful for snap-shot photography, though with very sensitive plates a good deal might be done with comparatively very short exposures.

In the last number of the *Correspondenz*, Dr. Eder describes some trials made with one of Miethé's new tele-objectives. In this combination, the front lens has its convex side outwards, and is about $1\frac{9}{16}$ inch diameter. The stops are about double this distance behind the lens, and beyond them again, at a distance of about $2\frac{5}{16}$ inch, is a small dispersing lens rather more than an inch in diameter. The front lens is adjustable by means of a rack and pinion, and its distance from the enlarging lens can be regulated between $5\frac{1}{2}$ to $7\frac{1}{4}$ inches. With an extension of the camera to about 14 inches, an object between 5 and 6 feet away is depicted of its natural size. With an extension of 10 inches, the lens covers a 7×5 plate sharp up to the edges, and the image is enlarged about four times as compared with the one taken with an ordinary lens of the same focus. The scale of enlargement increases with the extension of the camera. The working angle of view of the lens is about 10 degrees, the illuminated field of view covering 14 or 15 degrees. Beyond a certain point of extension it is useless to employ the smallest stop on account of diffraction. The aperture of the largest stop is about $f/5$ of the front lens. Compared with an anti-planet of about $10\frac{1}{2}$ -inch focus, the exposure for the anti-planet with the smallest stop was one second, and for the new lens five to fifteen seconds, with the smallest stop, but one. The pictures obtained with the new lens were well enlarged and full of detail.

Dr. Eder remarks that in taking views of objects at a distance, the state of the air has a great influence on the definition, just as with an ordinary telescope.



THE PHOTOGRAPHING OF COLORS.

BY M. G. LIPPMAN.

1. In the first communication upon this subject, which I had the honor of presenting to the Academy, I stated that the sensitive coatings I had employed were then lacking in respect of sensibility and of isochromatism, and that those defects formed the principal obstacle to the general application of the method which I had devised. I have since that time succeeded in improving the sensitive film, and, although there remains still much to be done, the later results prove sufficiently encouraging to allow of my imparting them to the Academy.

2. Upon coatings of albumino-bromide of silver, rendered orthochromatic by means of azaline and cyanine—I obtain highly brilliant photographs of the spectrum. All the colors come out at once, even the red, without the interposition of colored

screens, and upon one exposure comprised within the space of from five to thirty seconds. Upon two of the plates it was observed that the colors visible by transmitted light are very precisely the complementaries of those which one perceives by reflection.

3. The theory indicates that the compound colors which characterize natural objects should come out in photography, upon the same principle as the simple hues of the spectrum. It is, however, none the less necessary to verify the fact experimentally. The four plates which I have the honor to submit to the Academy represent faithfully objects sufficiently diverse. A church window in four colors—red, green, blue, yellow; a group of banners; a plate of oranges surmounted with a red poppy; a parrot of many-colored plumage. They show that the relief is rendered at the same time with the colors. The flags and the bird necessitated from five to ten minutes' exposure to the electric light or to sunlight. The other objects were secured after several hours' exposure to diffused light. The green of leaves, the gray of stone from a building, are upon another plate perfectly brought out; the blue of the sky, on the contrary, became indigo. It remains, accordingly, to perfect the orthochromatism of the prepared plate and to augment considerably its sensitiveness.—*Comptes Rendus*, April 25, 1892.

LANTERN SLIDES.

DEAR BULLETIN :

Lantern slides seem to have become so popular, and so much has been written regarding them, that the field seems to have been pretty well ploughed over. Innumerable developers have been suggested, toners, intensifiers and weakeners, strengtheners and softeners, pyro, ferrous oxalate, hydroquinone, eikonogen, para-amidophenol, mixtures of same, etc., each one of which is claimed to have some special property which enhances its value as developing agent. Different styles of plates have been suggested, some claiming that the very quickest dry plates are best, while the large majority use the specially prepared lantern-slide plates, as they are furnished cut to proper size, and, being on thin glass, are preferable to the thicker glass ordinarily used for dry plates, and saving the exhibitor an extra outlay of muscle in lifting many extra pounds in an evening's entertainment, to say nothing of the transportation of same all over the country and greater liability to fracture. Cover glasses are furnished of colorless glass about one-fiftieth of an inch in thickness, adding greatly to the quality of the slide as well as its lightness. There is one point I have not seen dilated upon as much as I think it deserves, and that is the difference in result when a slide is printed from contact with the negative or copied through the camera.

Take the same negative, print one from contact, and arrange it in the copying, enlarging and reducing camera, so as to yield the same size exactly when printed through the camera, and note the results on the screen. A negative that shows lines will be best to choose, as it is then the greatest difference will be noticed. Where a negative is taken of a drawing in black and white lines, the coating of gelatine, being so thick on the plate, will show the edges of lines rounded off and not perfectly sharp. In printing contact from such a negative, this roundness is magnified in the print, as the edge serves as a vignette to the line, making it still softer than in the negative. The thickness of the coating on the transparency plate doubles the effect. When copied through the camera, this blending effect is reduced to a minimum in the negative, and this is not increased in the slide, owing to its being acted upon by direct rays only, and not by diffused light, as is the case when printed from contact. When we speak of

contact, it is such as given in ordinary printing-frames, and imperfect. A perfect contact can only be had where the negative and slide are both on plate glass, or very heavy pressure is given in screw-presses, and these would be apt to break both glasses.

There are other reasons in favor of using the camera for printing : The choice of any part of the negative, the making of two or even three separate slides from the same negative, or one that embraces the whole, in the opening of the slide matt.

For perfection in lantern slides we must not look to the dry-plate process, either for the negative or positive, as the latter will never equal the wet collodion process. The reason is plain, as in the latter the picture is on a plane so immeasurably thin that, when brought into contact with its equivalent, the results are perfectly sharp and clear and the edges of the finest lines preserved. It is for this reason that negatives used in photo-litho and photo-engraving processes, zincography, etc., are invariably on wet plates. Celestial photography, also, is confined to the latter process, the swelling and shrinking of the gelatine film rendering it useless for such purposes where correct results are desired. In measuring the distances on a negative of the stars, the disturbance of the film during development, fixing, etc., might disarrange the stars some thousands of miles.

I should like to have the experiments in producing slides as stated above tested by some of your readers, and results stated. Any error in a small slide that may be imperceptible to the eye will be clearly shown when magnified many times on the screen.

Yours, etc.,

ABE LIZZARD.

Our correspondent does not seem to be aware that the great advances of modern astronomy are largely due to the use of gelatine dry plates.—EDITORS.

NOTHING NEW UNDER THE SUN.

WE copy the following from the *Scientific American* : “ Among the novelties recently introduced here, we find a curious thing in photography. It consists of a cigar or cigarette holder, accompanied with a small package of plain white

photographic papers about the size of a postage stamp. If one of these papers be placed in the interior of the holder, before an orifice arranged for the purpose, the tobacco smoke will come in contact with it, and develop thereon a portrait or other object.



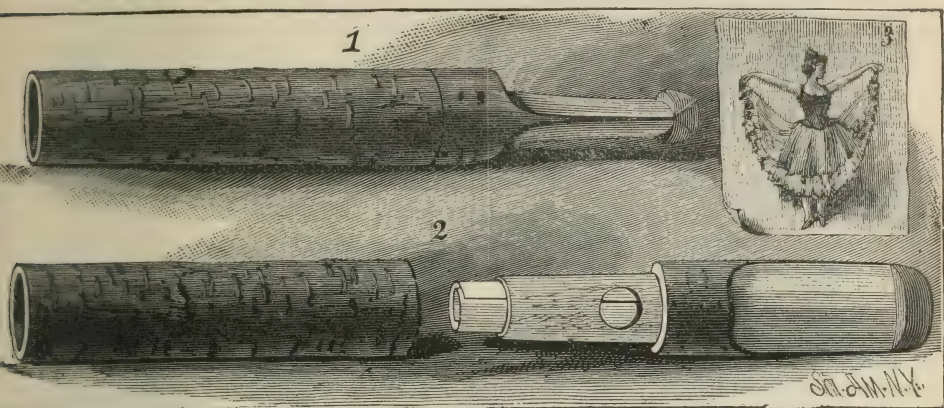
FIG. 4.—DEVELOPING THE PHOTO.

“ The process employed is very simple, and consists in preparing a small photograph on chloride of silver paper, and dipping it into a solution of bichloride of mercury, so as to bleach it and cause it to disappear. It is necessary to prepare the photographs without gold. The bichloride of mercury changes the photograph partly into white chloride of silver and

partly into protochloride of mercury (which is also white), and thus renders it invisible on the white paper.

"The image may afterward be made to appear by the action of hypochlorite of soda, or by that of ammoniacal vapors. Tobacco smoke, which contains vapors of ammonia, succeeds very well, as we have above noted, and colors the magic photographs black.

"In the annexed cut, Fig. 1 represents the cigarette holder closed; Fig. 2



PHOTOGRAPHIC CIGAR HOLDER.

shows it open, exhibiting the orifice and showing one of the small plain papers inserted in the holder, and Fig. 3 shows the paper after the image has been developed upon it."

THE MAGIC PHOTOGRAPH; OR, HOW INSTANTANEOUSLY TO PRODUCE A PHOTOGRAPH ON PAPER.

[For the sake of showing how history repeats itself, we reprint the following, published in 1866, by Professor John Towler.]

Another photographic plaything is before us, which, from all appearance, will be in great demand for a while. It can be made very amusing for children, and for all others of a more advanced age, who are not above being what they have once been, when fictitious pleased them more than realities.

A very estimable and intellectual lady, the head of an establishment where our sisters and daughters are washed, taught, and prepared for spheres hereafter, called in the aid of a chemist a few months back to instruct her in the preparation of magic papers or leaves to be used by a little witch or fortune-teller at an evening's entertainment for the benefit of our sick soldiers.

The little sibyl, whose office it was to superintend this branch of the evening's recreations, was appropriately donned in the habiliments of an enchantress, and her nook was a sylvan haunt constructed in the corner of a room amidst roots, logs, snakes and ogres. Fiery eyes were seen flashing scintillations through every avenue amid the overhanging branches, to give magic zest to the retreat and to deter intruders. Within this dark abode, at the entrance of a cave, sat the little sibyl, who had only to look to lure; and many were the victims of that night, beguiled of their mental composure for months afterwards by the incantations or spells of the sibyl's eyes. Before her was a wicker basket wound alternately with green twigs, snakes and centipedes; and this basket was full of sibylline leaves, small pieces of paper perfectly white and without stain. The sibyl sold these papers at the rate of two shillings each, and so great became the sale that a little Puck had to be generated among the dentiform crevices to assist in the distribution. As soon as the sibylline leaf was paid for, the tiny fingers of the sylph dipped it in a ewer of water, the fluid of incantation. No sooner was this done than there started out upon the leaf words distinct and legible, prophetic of the youth's future; and the youth, not like us old codgers, long initiated in the wiles and charms of sirens, was fain to believe in the truth of the prophecy—that there was an appropriateness, a fitness, a probability in the prophetic leaf, the fond creature could not help but believe; hence, his sleepless nights and his dreamy days for months after this event.

You would like to know how these magic leaves were prepared ?

This is just what we expected.

Two liquids are required in the preparation of sibylline leaves. One is the invisible ink with which the leaves are written before they are deposited in that frightful basket, and the other liquid, when the leaves are immersed in it, colors the invisible ink, and thus makes it quite legible.

Such inks are called sympathetic ; there are several of them.

The following two liquids produce, by their conjoint action, blue letters :

Dissolve a grain or two of protosulphate of iron (green vitriol, such as you use in your developer) in a dram of water, and with a perfectly clean pen write with this solution on a piece of paper. When dry, the writing will be invisible. But now immerse the dried leaf in the following solution :

Ferrocyanide of potassium (yellow prussiate of potash)..... 1 dram.
Water..... 1 ounce.

As soon as the paper has been immersed in this solution, take it out and watch the letters and words—how beautifully they begin to appear of a rich blue color.

INK OF A CHOCOLATE-BROWN COLOR.—FIRST SOLUTION.

Sulphate of copper 2 grains.
Water..... 1 dram,

Write with this solution.

The second solution is the same as before ; that is, that of the yellow prussiate of potash.

The reader will now be able to comprehend the nature of the magic photographs, which are not *miracles*, nor is their production a recent discovery. But there is much amusement to be derived from their preparation, and we hope, too, that our practical operators will be able to derive some profit from them.

HOW TO MAKE THE MAGIC PHOTOGRAPHS.

Take in the first place an ordinary print, a card-picture, for instance, on albumen paper, beneath the negative in the usual way, and, when sufficiently printed, let it be carefully washed in the darkroom so as to remove all the free nitrate of silver, etc. Now immerse it in the following solution, also in the darkroom :

Saturated solution bichloride of mercury (corrosive sublimate)..... 1 ounce.
Hydrochloric acid..... 1 dram.

The saturated solution is previously prepared by putting into water more bichloride of mercury than it will dissolve by shaking in about twelve hours. Pour off the quantity required.

The print will gradually be bleached in this liquid, in the ordinary meaning of the word—that is, it will disappear ; but the fact is, the print is still there, its color alone is changed, a double salt having been formed of mercury and silver which is white, as many of our readers, who have been in the habit of intensifying with a mercurial salt, are aware of. As soon as the print has quite disappeared, the paper is thoroughly washed and dried in the darkroom ; it is also preserved between folds of orange-colored paper in order to keep it from the action of light ; for the surface is still in some measure sensitive to light.

The bleaching of the print—that is, its conversion into a white salt—is effected more quickly by keeping it in motion in the mercurial solution.

As we said before, the print has not been bleached in reality ; the substance which originally formed it is still there together with a new substance—a salt of mercury. But the two salts of silver and mercury may be easily brought out and made visible by several solutions, such as sulphide of ammonium, solution of hydrosulphuric acid ; in fact, any of the soluble sulphides, ammonia and hyposulphite of soda. The latter salt is used in preference to the others. Small pieces of blotting-paper, therefore, of the same size as the prints, are cut out and steeped in a saturated solution of hyposulphite of soda and then dried.

The magic photographs are packed, as before stated, between folds of orange-colored paper ; the papers dipped in hyposulphite of soda are the developers, and may be packed between two sheets of common writing-paper. The development of the image is effected in the following manner :

Place the albumen paper which contains the whitened print on a pane of glass, print side upwards ; on this lay the dry piece of blotting-paper that has been previously dipped in hyposulphite of soda. Moisten the latter thoroughly ; then place over it a pane of glass, and upon this a weight to bring the two pieces of paper into intimate contact. In a very short time the picture will appear in all its original detail and of a sepia tone.

OUR ILLUSTRATION.

OUR good friend, Mr. Conly, of Boston, supplies the frontispiece illustration to this issue of the BULLETIN. The picture, which is one of a series, furnishes some points worthy of study in posing, lighting and the use of background and accessories. In all these points there is always something to learn from Mr. Conly's work, and we hope the picture will prove instructive to all our readers. In addition to the artistic merits of the pictures, many of them exhibit some nice work upon the negatives, both in the use of the lens and in retouching.

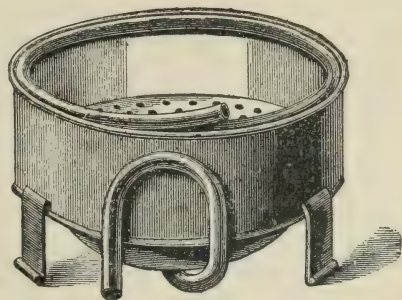
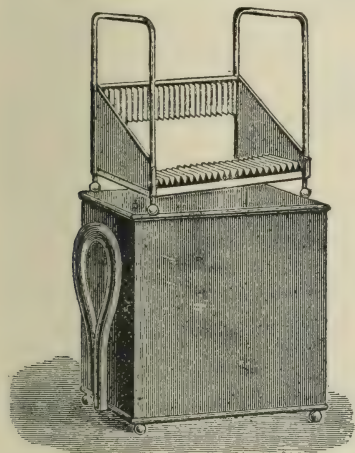
A TOUCHING APPEAL.

MR. H. H. SNELLING, for a long time connected with the *Photographic Art*, in its early days, and who devoted a large portion of his time and money to the improvement of the art and its advancement, practically and intellectually, and who has suffered for many years with disease, and has now become blind, or nearly so, finds it necessary to make an appeal to the benevolence and liberality of the subscribers to the BULLETIN to aid him in obtaining admittance into the Aged Men's Home. Mr. Snelling's case is one that appeals strongly to the liberality of the photographic community, and we hope that the subscribers of the BULLETIN will come forward with their usual promptness in such cases, as immediate action must be taken for his relief.

Subscriptions sent to us will be transmitted to Mr. Snelling.

NOVELTIES IN APPARATUS.

THE negative and print washers shown in the annexed cuts, are to our mind the best that we have ever seen. The principal noteworthy feature of their con-



struction is the automatic siphon overflow which empties out the entire contents of the box whenever the water reaches within 2 inches of the top. In the case of the print washer, this is especially good, as it effectually prevents the prints from running over the sides of the containing vessel, and the incoming current of water keeps the prints in constant motion. About one-half the time ordinarily devoted to washing of prints and negatives may be saved with the certainty of perfectly eliminating even the last traces of hypo.

ANTHONY'S Photographic Bulletin.

EDITED BY

Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by **ARTHUR H. ELLIOTT, Ph.D., F.C.S.,**
and a corps of practical assistants.

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THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

A STATED meeting of the society was held on Wednesday evening, June 8, 1892,* Mr. JOSEPH H. BURROUGHS, *President*, in the chair.

The Board of Directors reported that at the conversational meeting, May 25th, the prize lantern slides sent to the American Interchange by the English journal, *Photography*, were shown.

Mr. Harrison D. Stratton was elected an active member at the board meeting, June 2d.

The family of the late Mr. William L. Springs have presented to the society a collection of lantern slides made by Mr. Springs.

A communication from Mr. F. C. Beach, editor of the "American Amateur Photographer," was read, in regard to a petition for the extension of the photographic privilege at the World's Fair in Chicago in 1893.

On motion of Mr. Taylor, the president was authorized to sign the petition representing the two hundred active and life members of the society.

Mr. G. B. Wood exhibited a small camera

which a friend of his had brought from Paris. It was of the size and shape of an opera or field glass, and carried 12 plates, size $2\frac{3}{8} \times 1\frac{3}{8}$. The lens was of a universal focus, and was contained in one side of the camera. The other side was used as a finder, the exposure being made by an exposing shutter on the lens.

Mr. G. B. Wood also exhibited a very ingenious dark lantern for use when traveling. It contained a reservoir for stearine, so arranged that, when the lamp was lighted, the heat melted the stearine, which then ran down to the wick. The lantern was small and compact, and could be readily packed for traveling.

Mr. Jennings exhibited a series of lantern and stereoscopic slides of lightning flashes. The stereoscopic pictures, he claimed, were the first ever made of the heaven's electrical discharges, and the stereoscopic effect was decidedly interesting. In one case the sensitive plate had caught the mystical thunderbolt, from which radiated, in various directions, numerous tongues of flame. The theory of the exhibitor was that thunderbolts were formed by a collision of flashes and a consequent scattering of the discharge into a number of points or balls of flame, which traveled onward into space on their own account.

In another view the stereoscope revealed the fact that a discharge apparently zig-zag in its direction, was really spiral in its course.

Mr. Browne submitted two negatives for inspection, one of which, a flash-light picture, was disfigured by a wavy ribbon of light across the center. The other was dotted with small circular spots of white glass. The latter, he believed to be due to the use of a rose nozzle in washing—a wearing away by the continued action of water—but the former he was utterly at a loss to account for.

Mr. Wood stated that he noticed the other day, on examining certain negatives taken seven or eight years ago, that the film was leaving the plate—coming off in great flakes. The plates were not frilled when developed, and he thought perhaps the alum bath rendered the film brittle, and gave it a tendency to leave the plate.

Mr. G. M. Taylor said he knew of an instance where the film had left the celluloid altogether—had peeled off in one piece.

Mr. Young exhibited negatives made by the new Zeiss Anastigmat lens, manufactured by the Bausch & Lomb Co. The lens was 4×5 , but Mr. Young tried it on a $6\frac{1}{2} \times 8\frac{1}{2}$ plate, with full opening, and it covered the

plate well to the margin. The definition, depth of focus and rapidity were remarkable.

Mr. Pancoast showed a panoramic photograph of the city of Waterbury, Conn., which he had taken by means of an adjustable tripod top of his own manufacture. Four 8 x 10 plates were used, and the pivotal top he had carefully subdivided into four positions, embracing, in all, 101 degrees. He had a supplementary arrangement with five positions, which would take in 124 degrees. The picture exhibited showed great uniformity, and the continuity was admirable.

At the conclusion of the meeting a series of slides, presented to the society by the family of the late Mr. Springs, formerly a member of the society, were shown upon the screen, together with others contributed by members present for the evening's entertainment.

Adjourned. ROBERT S. REDFIELD,
Secretary.

CALIFORNIA CAMERA CLUB.

THE PAY EXHIBITION.

THE time in which to complete our preparations for our annual Pay Exhibition is now short. The Committee appointed for that purpose feel sure that the members of the club have sufficient pride in their own work, and sufficient interest in the success of the club, to assist this committee in the work undertaken in every way possible.

Those in charge of this exhibition are desirous, naturally, of maintaining the high standard already set by the California Camera Club, and of maintaining, in our slides, that same excellence which has won for us such favorable comment wherever the slides of the California Camera Club have been exhibited. Now, to maintain this standard it will be necessary to rely, not upon the collected work of any one member, but upon the selected work of all the members of the club.

Should each member of the club contribute to this exhibition one or more slides, not only would there be a greater probability of excellence in these selected slides, but a greater interest will attach to the exhibition among our friends and acquaintances. Each member will have a special interest in the success of the exhibition, and, that success assured, each member will have had a special share in that success. There will be not only the pride in the work of the club as a whole, but individual pride in the success of the individual work.

The exhibition will be held some time in

August, and we therefore ask the members to begin at once, now, to send in slides. From now on until the night of the exhibition, slides will be tested every Wednesday night at the club rooms. Every member of the club is specially invited to bring or send slides.

To those who do not make slides, but have good negatives, the committee offers to make slides from those negatives sent in to them. Special care will be taken of these negatives and no one need hesitate (from fear of danger to the negative) to send in the very best negative in his or her possession.

The success of the exhibition will contribute greatly to the success of the club; to insure the success of this exhibition, every member must assist.

Come, let's all "boom" this thing! We don't want any "one-man show," for more reasons than one. If you want to see our pay exhibition a success, show how much of a success you want to see it—"By their works ye shall know them" (even in amateur work sometimes).

If any further information is desired, apply to any member of the committee, or at the club rooms.

H. C. TIBBETS,
H. C. OWENS,
T. P. ANDREWS,
GEO. W. REED,
A. G. MCFARLAND,
C. V. LANGE,
C. F. CORMACK,
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CHAS. ALBERT ADAMS,
Committee.

THE COLORADO CAMERA CLUB.

THE third reception and lantern exhibition of the Colorado Camera Club was held at the club rooms Tuesday evening, June 7th. The large lecture room was comfortably filled by a most appreciative audience. Mr. W. H. Jackson, the president, gave a short address which was followed by a stereopticon exhibition. The following members contributed slides:

Geo. W. Platt, curious rock formations of Colorado.

Prof. Hart, Indian life in New Mexico, and microscopic objects; Miss Sarah Hayes, Arthur Russell, W. E. Perkins, W. L. Pedrick, Milo Cornwall, Frank Hubby, and D. H. Smith, Colorado scenery.

H. S. BELLSMITH,
Corresponding Secretary.

ROYAL SOCIETY CONVERSA- ZIONE.

Meteorological and Geological Photographs.

—The British Association Committee on the Application of Photography to Meteorology exhibited some good photographs of clouds, taken at the Specola Vaticana, at Rome, by the Rev. Padre Denza, of the Society of Jesus. The Director-General of the Geological Survey exhibited a series of views illustrating the geology of the North-West Highlands, photographed by Mr. Robert Lunn, of the Geological Survey of Scotland. The photographs consisted of: (A) Scenery of Lewisian Gneiss in districts unaffected by post-Cambrian movements; (B) Original structures in Lewisian Gneiss; (C) Secondary structures in Lewisian Gneiss, due to pre-Torridonian movements; (D) Torridon sandstone in regions unaffected by the post-Cambrian movements; (E) Scenery of districts where the Lewisian Gneiss, Torridon sandstone, and Cambrian rocks have been affected by post-Cambrian movements. Professor W. C. Williamson exhibited a series of enlarged transparent sections of some of the fossil plants of the coal measures. Mr. W. Saville-Kent exhibited some photographs and some water-color sketches illustrating coral reefs and marine found off the Great Barrier Reef of Australia. The ponderous edible oyster from the Great Barrier Reef sometimes has a pair of shells weighing 6 or 7 pounds.

Solar Spectrum Photographs.—Professor Alexander S. Herschell, who unfortunately does not now take such an active part in public work in photography as was once the case, exhibited some photographs illustrating the systematic and simple construction of the dark absorption bands A, B, and *a* in the solar spectrum, which illustrations he thus described: "(1) Three gelatinized paper photographs of the dark absorption bands, *a*, B, A, in the solar spectrum, recently produced by Mr. G. Higgs, F.R.A.S., of Tuebrook, Liverpool. These photographs exhibit the rythmical arrays of those bands' component linelets with surprising clearness and sharpness of definition, and with remarkable certainty of their spectrum-place determinations on a very accurate normal scale of wave lengths affixed to them. (2) Three plain and colored line projections of the rythmically grouped lines in the above three solar spectrum bands. These are copied and enlarged from Mr. Higgs' photographs, in their natural conformations, with tentative-line systems superposed upon them, showing a resolution (perfectly complete in number, and very nearly accurate in line positions) of the bands' line aggregations, into a set of simple component systematic line-progressions."¹

Bibliography.

TRAITÉ PRATIQUE DU DÉVELOPPEMENT.
Par Albert Londe. Paris: Gauthier-Villars et Fils, 1892.

This is a timely and able discussion on the practice of development, combined with just sufficient theory for fully explaining the reasons for the various steps. In this way tediousness has been avoided, and the subject is handled in a manner which makes it attractive to both the amateur and professional. It is a 12mo of 102 pages, and we can heartily recommend it for perusal.

IMPRESSIONS PHOTOGRAPHIQUES AUX EN-
CRES GRASSES. Par E. Trutat. Paris:
Gauthier-Villars et Fils, 1892.

Photocollography for amateurs is something almost totally unknown. A perusal of this work will make many of us ask the question why we have never tried it. There seems to be little that is difficult in the process, and we predict that many who read will be tempted to try this fascinating development of the art of photography. The work is a 12mo of 140 pages, and the text throughout is fully illustrated by cuts

LES POSITIFS SUR VERRE. Par M. H. Four-
tier. Paris: Gauthier-Villars et Fils,
1892.

This is an elaborate discussion on the preparation of glass positives of every kind. To the lover of lantern slides it will be especially welcome. All the processes and details are stated with remarkable clearness, and are fully illustrated by cuts. The table of contents is voluminous, embracing glass positives and the preparation of the plates, gelatino-bromide plates, the carbon processes, the colodion processes, the preparation of the various emulsions and the kinds best suited for use, the albumen process, processes of coloring bichromatized gelatine positives, and concludes with several special processes. The work is an octavo of 200 pages, and is a decided addition to any library, either amateur or professional.

LAKE GEORGE, LAKE CHAMPLAIN AND
SARATOGA. By S. R. Stoddard, Glens
Falls, N. Y., 1892.

This well-known guide-book once more puts in its appearance in attractive form. Mr. Stoddard has for years made a specialty of this kind of publication, and his skill as a photographer largely adds to the attractiveness of his books, in which many of his pictures are reproduced.

THE ADIRONDACKS. By S. R. Stoddard, Glens Falls, N. Y., 1892.

For years Mr. Stoddard's maps of the Adirondack wilderness have been the standard among all parties traveling in that region. His guide-book of that region is equally indispensable, containing much valuable information concerning hotels, inns and portages. The bits of local history and anecdotal features introduced make the little volume very pleasant reading.

A MANUAL OF PHOTOGRAPHY. By A. Boothers, F. R. A. S. London: Charles Griffin & Co., 1892. Philadelphia: J. B. Lippincott & Co.

In compiling this valuable work the author has endeavored to produce a handbook for students of photography, in which he covers the history of the art, together with its processes, apparatus, materials and applications.

With such a wide range of subject we naturally expect much from the work, and neither student or reader will be disappointed in this or any other respect.

It is a large octavo of 250 pages with numerous well-executed illustrations and cuts, designed to illustrate both the method of procedure in the different processes, and the results which it is possible to obtain through their use.

The book opens with an historical sketch of some sixteen pages, in which the early workers and progress of the art receive mention.

Chapter II is devoted to a discussion of the chemistry of photography, and in it the subject is discussed with sufficient fullness to enable the reader to thoroughly comprehend the reasons so far as known for the various results produced by the exposure and development of the sensitive plates.

The optics of photography are similarly discussed and the requirements of the various lenses for different purposes concisely stated.

The various methods of illumination for photographic use is the subject of another chapter, in which are mentioned the electric, oxyhydrogen, magnesium and lime lights.

The various processes, mechanical and otherwise, form the subject-matter of Part II, and to the student and professional this part is especially valuable.

Process work of all kinds is daily becoming more important, and it is here brought down to date in a series of succinctly written descriptions.

Photographic apparatus of all kinds is fully

treated in Part III. This is a subject which deserves, and is given, careful attention; and in the selection of particular apparatus for special kinds of work, it will prove specially valuable.

Part IV treats the materials used in photography; what they should be and what they should not be, and the application of the various chemicals mentioned, as well as their chemical formulas, origin and properties in many instances.

The various applications of photography and some valuable practical hints serve to bring to a fitting close this really admirable treatise, in which is to be found everything of practical value in connection with photography.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. Correspondents will please remember this. No attention will be paid to anonymous communications.

Q.—H. B. writes: We are using the "American Aristo" paper, and are considerably bothered with having the retouching on our negatives slip when we revarnish with the Aristo varnish. Can you kindly tell us the cause or remedy through your columns? Without using the varnish, the retouching sticks to paper and is removed that way. We have used both dry plate and flint varnish with the same result

A.—We do not quite understand your difficulty, but would suggest that you do not use the dry plate or flint varnish, and use the Aristo varnish as a foundation for your retouching. In this way the retouching will be upon the same basis as the varnish you cover it with, and no trouble should result. If this does not work, send us a negative that is spoiled by the removal of the retouching, and also a negative retouched but not varnished, and we will try to help you out.

Q.—C. B. McD. writes: I send by this mail a landscape photograph, and would be much pleased to learn the formula by which the same was toned, through the columns of the BULLETIN?

A.—We are not absolutely certain about the toning of this picture, but the same kind of tone can be produced by using a gold toning bath containing plenty of alkali and kept at a temperature of about 100 degrees Fahr. See

answer to R. M. in BULLETIN, June 11, 1892, page 351.

Q.—J. S. G. writes: Please tell me how to handle ready sensitized Albumen paper to keep from curling off cards. I tried pressing, but it nearly always sticks so as to ruin the pictures. Is there no process to put it through to stop the trouble? I like the paper better than Aristo, on account of its being tougher.

A.—Your trouble is probably due to the use of paste that is too thin. Make a good, stiff paste, and allow it to dry before you attempt to burnish it, using castile soap dissolved in alcohol as a lubricator for the burnisher, and have the latter hot. We are surprised at your dislike for Aristo; it is certainly superior to the ready sensitized Albumen paper, and you should learn to use it. Send to our publishers for the latest methods of treatment with hot water and your troubles will end.

Views Caught with the Drop Shutter.

WE learn that Mr. DAVID BAILY, the well-known photographer of Tamaqua, Pa., has decided to retire from business after thirty years of successful management. The business will in the future be carried on by his son Mr. ELMER D. BAILY, and we heartily wish him a career of equal success and brightness.

Mr. J. PITCHER SPOONER, of Stockton, Cal., is having a new studio fitted up for himself in the Yosemite Theatre block in that town.

His parlors will be elaborately decorated and provided with all the latest apparatus. Mr. SPOONER has devoted the greater part of his life to his profession, and has but recently returned from a trip to the Eastern States, which he undertook for the purpose of becoming better conversant with any little wrinkles which his Eastern confrères might have in their possession.

JAMES KERR, a young man badly wanted by the police for swindling people on a photograph order, was pointed out last evening to Officer Benzling by Ben Hops, one of the victims, and taken in custody on the charge of obtaining money by false pretenses. He collected \$3 from Hops on an \$11 crayon, which he said was being done by Levi, the photographer. Hops dropped in to see how the picture was progressing, and found that Levi knew nothing about the crayon. On the way home he saw Kerr, and caused his arrest. The latter is thirty-six years old, and lives at 45 Chestnut street. He is suspected of similar jobs all through Cummins ville.—*Cincinnati Commercial*.

WE regret to note that E. J. PULLMANN, the well-known Washington photographer, was burned out on June 28th. Mr. and Mrs. Pullmann, together with their daughter, had a narrow escape with their lives, and we are sorry to hear that Mr. Pullmann had no insurance. We tender our sympathy in his misfortune, and hope he will soon be at work again with his past and added successes.

TABLE OF CONTENTS.

| | PAGE | | PAGE |
|---|------|---|------|
| A TOUCHING APPEAL..... | 411 | RELATIVE EXPOSURES FOR VARYING | |
| BIBLIOGRAPHY..... | 414 | PROPORTIONS OF IMAGE TO THE | |
| EDITORIAL NOTES..... | 387 | ORIGINAL, <i>by W. E. Debenham</i> | 400 |
| ENGLISH NOTES..... | 394 | TELEPHOTOGRAPHY, <i>by Col. J. Water-</i> | |
| LANTERN SLIDES..... | 407 | house, <i>S. C.</i> | 405 |
| LETTER FROM GERMANY, <i>by Dr. H. W.</i> | | THE CALIFORNIA CAMERA CLUB..... | 413 |
| Vogel..... | 390 | THE COLORADO CAMERA CLUB..... | 413 |
| METOL—ANOTHER NEW DEVELOPER... | 385 | THE PHOTOGRAPHIC SOCIETY OF PHILA- | |
| NOTHING NEW UNDER THE SUN..... | 408 | DELPHIA..... | 412 |
| NOVELTIES IN APPARATUS..... | 411 | THE PHOTOGRAPHING OF COLORS, <i>by M.</i> | |
| OUR ILLUSTRATION..... | 411 | G. Lippman..... | 406 |
| PIZZIGHELLI'S IMPROVED DIRECT PLA- | | THE TONING ACTION OF ALUM HYPO- | |
| TINOTYPE PROCESS, <i>by H. E. Gunther</i> | 402 | BATH ON CHLORIDE PLATES, <i>by Dr.</i> | |
| ROYAL SOCIETY CONVERSAZIONE..... | 414 | Leo Backeland..... | 399 |
| RELATIVE BEHAVIOR OF DEVELOPER | | VIEWS CAUGHT WITH THE DROP SHUT- | |
| AND SENSITIVENESS IN GELATINE DRY | | TER..... | 416 |
| PLATES, <i>by J. von Norath</i> | 397 | WHAT OUR FRIENDS WOULD LIKE TO | |
| | | KNOW..... | 415 |



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EVANESCENT RECORDS

ANTHONY'S Photographic Bulletin.

EDITORS :

PROF. CHARLES F. CHANDLER, PH.D., LL.D.

PROF. ARTHUR H. ELLIOTT, PH.D., F.C.S.

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MANGANESE SALTS IN PHOTOGRAPHY.

MESSRS. A. & L. LUMIÈRE have recently investigated the action of manganese salts when exposed to light, and their investigation has resulted in giving us a new method of photographic printing, which has been noted in our letter from France in this issue.

They have shown that the action of light on many of the manganese salts, in the presence of a reducing agent, is to reduce them to the lower form of manganous salts.

Some years ago, M. Fremy, in his researches on the salts formed by the peroxide of manganese, discovered a method of obtaining a sub-sulphate of manganese by the action of sulphuric acid on permanganate of potash. This idea was again taken up by the Messrs. Lumière who further elaborated it, studying the action of the various organic acids upon the same substance.

They found that, by this means of procedure, they obtained a black substance, probably manganic oxide, readily soluble in the various organic acids, and presenting all the characteristics of manganic salts. Upon the addition of some reducing agent to these solutions, they become rapidly decolorized under the influence of light or heat.

The exact nature of the compounds thus formed has not as yet been determined, but it is probable that they are true manganic salts.

These experiments were continued, using the various other alkaline permanganates in connection with oxalic, citric, tartaric and lactic acids. Of the compounds thus formed, that produced by the use of lactic acid upon potassium permanganate was found to be the best suited for photographic use, as it gave a sensitizing solution which it was possible to preserve for a reasonable length of time.

Another difficulty arose, however, which had to be overcome before these discoveries could be shaped into something tangible as a printing process.

The change in color, owing to the reduction of the solution by exposure to light, was not sufficiently intense to give the contrast required in a photographic print.

It was found that this could be remedied by utilizing the property of manganic salts of forming coloring matters by oxidation of certain organic bodies, such as the monamines, the diamines, the amidophenols, etc.

In this way the manganous salts formed by exposure of the sensitizing solution to the light were without action upon these developers, and sufficient contrast could be obtained to make a satisfactory print.

Furthermore, the color of the print could be varied at will by the employment of a different developing agent, a combination of two or more of them often producing a satisfactory result.

Analysis of the coloring matters produced in this way showed them to be oxidation products of the developing agent employed, and not a compound containing any manganese.

An image of the spectrum, when projected on a gelatine paper sensitized with oxalate of manganese, showed the maximum of reduction between the yellow and the green, between the rays *D* and *E*. If the exposure were sufficient, the impression was extended throughout the visible part of the spectrum.

The actinic curve was found to correspond to that of the luminous intensity, with the difference that the maximum of chemical action was slightly displaced to one side of the most refracted rays, and appeared between *D* and *E*.

The method of procedure and of sensitizing the paper which has been found to give the best results, is given below.

A solution of permanganate of potash of the following proportions—

| | |
|-----------------------------|----------|
| Permanganate of potash..... | 6 parts. |
| Distilled water..... | 50 “ |

is made up in a vessel so arranged as to admit of cooling to a constant temperature of 60 degrees Fahr. To this is added, drop by drop, 16 parts of a solution of lactic acid of 1.225 density, and then 3 parts of formate of potassium.

The solution is filtered and placed in a tray in a room lighted by artificial light.

On the surface of this liquid a thinly gelatinized paper is floated for one minute, in the ordinary manner. The excess of fluid is removed by placing between two large sheets of blotting paper, after which it is allowed to dry suspended in a room free from dust and light.

If properly prepared, this paper, when exposed under a glass positive, should print in a little less time than that required by ordinary albumen paper.

As soon as the high lights of the print are completely decolorized, it is removed from the printing frame and immersed in a 5 per cent. solution of para-amidophenol-hydrochlorate. The image rapidly attains the desired intensity, and is then washed in running water a few minutes to remove the greater excess of the soluble salts which impregnate the paper.

The light yellow tint noticeable in the image may be removed by the use of a weak solution of hydrochloric acid.

The paper is then thoroughly washed, and may be subsequently treated in the same manner as a silver print.

Prints made in this manner, when exposed for three months to the action of the sun, did not show the slightest signs of alteration.

The following table, taken from the author's paper in the "Bulletin de la Société Française de Photographie," gives the various color re-actions obtained by the use of the different developing agents.

| DEVELOPER. | COLOR OF PRINT PRODUCED BY ACTION OF DEVELOPER. | COLOR OF DEVELOPED PRINT AFTER TREATMENT WITH HYDROCHLORIC ACID. | COLOR OF DEVELOPED PRINT AFTER TREATMENT WITH AMMONIA. |
|--|---|--|--|
| Aniline, or any of its salts.. | Green; the whites tinted. | Green, the whites a little purer. | Intense violet-blue. |
| Toluidine (para)..... | Red, slightly soluble in water; image fades on washing. | No action. | Yellow. |
| " (ortho)..... | Green. | " " | Violet, slightly soluble. |
| Xyldine (para)..... | Red-violet, then green violet; image feeble; soluble in water. | " " | Pale reddish-yellow, soluble. |
| " (commercial)..... | Pale yellow-brown. | Pale violet; image fades on washing. | Yellow. |
| L. Naphthylamine (hydrochlorate)..... | Blue-green. | Blue. | No action. |
| B. Naphthylamine (hydrochlorate)..... | Black. | Brownish black. | Reddish. |
| Sulphate of diphenylamine. | Green, then pale yellowish green. | No action. | Brown. |
| Benzdine (hydrochlorate)... | Intense blue. | Yellowish brown; becomes blue on washing. | Yellow, marked fading; becomes blue on washing. |
| Toluidine (").. | " " | Soluble yellowish red. | Pale yellow. |
| Para-phenylene diamine (hydrochlorate)..... | Green, then blue and then black, gradually becoming more feeble. | | |
| Meta-phenylene diamine (hydrochlorate)..... | Brown. | Pale brown. | Pale yellow-red. |
| Meta-toluidene diamine (hydrochlorate)..... | Brown. | Red-brown. | Yellow. |
| Sulfanilic acid..... | Pale brown. | No action. | Yellowish. |
| Guaiacol..... | Pale yellow. | " " | Pale green. |
| Resorcin..... | Pale yellow. | " " | " " |
| Para-amidophenol (hydrochlorate or sulphate).... | Pale yellow. | Pale green. | Green. |
| Ortho-amidophenol (hydrochlorate)..... | Brown. | Red-brown. | Intense violet. |
| Pyrocatechin..... | Yellow. | Red, soluble in water. | No action. |
| Phloroglucine..... | The shadows do not appear; the high lights become violet; the print becomes a negative. | The print disappears. | Reddish violet. |
| Pyrogallie acid..... | Very pale yellow. | " " | No action. |
| Eikonogen..... | Intense violet-black. | Pale yellow. | Intense reddish violet. |
| Amidobenzoic acid..... | Green. | Brown. | No action. |
| | Feeble yellow. | Reddish yellow, soluble in water. | " " |

The variety of color obtainable in the finished print is thus seen to be considerable, and the process would seem to offer every inducement for a thorough trial.

Neither the manipulation nor the sensitizing is at all difficult, being performed in exactly the same manner as in ordinary silver printing, and there is no reason why manganese salts should not speedily occupy a prominent place in the preparation of sensitizing printing paper.

EDITORIAL NOTES.

A SERIES of instructive experiments have lately been conducted by M. E. Pfeiffer, to ascertain the effect of the action of water on glass. He has demonstrated that its first effect is to dissolve nearly all of the pure alkali out of the glass, after which the alkali so dissolved acts upon the silica. These facts have been established through the aid of electricity, the theory being that the amount of alkali remaining dissolved in solution determines the conductive power of the solution.

As the silica is dissolved, the conductive power is lessened, and may thus be measured. The silica is found to dissolve more rapidly as the temperature is raised.

THE California Camera Club gave its twenty-fifth illustrated lecture on the 28th ultimo to a large and interested audience. The subject was "Alaska, the Land of the Midnight Sun," and was ably handled by Dr. J. A. A. Henry.

An exhibition of prints, by members of the club, is in course of preparation, which gives promise of being, what all their entertainments are, a big success.

An instructive paper was recently read before the London and Provincial Photographic Association by Mr. E. Howard Farmer, on "Some Factors Regulating Exposure," in which he said, in effect, that the reason that objects in the near foreground of a picture required so much longer exposure than those at a distance, was that they, being so prominent, required more detail in their darker parts than objects at a distance from the camera; a haze, too, might render a greater rapidity to distant objects. On this same theory he demonstrated how a large head in portraiture might require a much longer exposure than a smaller one.

VERY extensive experiments have been made at the Royal Institution, London, on the liquifaction of gases, and the method has been brought to such a state of perfection that Prof. Dewar was enabled, during his lecture on the subject, to present to the chairman a glass of liquid *air*. Quantities of nitrous oxide, ethylene, and freezing mixtures are necessary for its production.

THE BULLETIN is credited by a contemporary with having published a masterly piece of nonsense in the shape of a report of "Photography in Germany," in which a long string of impossible words, supposed to have been suggested by the orthography of the German language, fail to tell any story; and while the BULLETIN is, of course, glad to receive credit for what it does, and is perfectly willing that its friends and neighbors should help themselves from its store if they will give it such credit, it believes that life is too short, and space too valuable, to waste either in such an effort as this. It, therefore, turns to the old Scripture text, and asks that those who do make use of what it offers will "render unto Cæsar that which is Cæsar's" only.

ACCORDING to the yearly report of the Astronomer Royal at the Greenwich Observatory, the British Isles were deprived of between 5 and 6 per cent. of the amount of sunshine that they have been in the habit of enjoying in years past. The sun was above the horizon in the year 4,454 hours, but the amount of time his rays were visible was only 1,222 hours. This shows a total of 27 per cent. only of possible sunlight which materialized.

A WRITER in the *British Journal of Photography*, speaking of the dirty red tone so often seen in prints that have been "restored" with bichloride of mercury, says, that this may be overcome if a much weaker solution is employed, and a longer time given to treatment. In his experience, a quarter to a half grain of bichloride to the ounce of water is sufficient, but the print must soak therein for several hours.

MEMBERS and friends of the Colorado Camera Club enjoyed their first field day on the 26th of June. A series of negatives will be submitted to a Committee, and prizes awarded to those showing the best and next best sets of views made on the excursion.

THE members of the Photographic Convention of the United Kingdom were officially received on the 11th inst. by the Lord Provost of Edinburgh, which is an honor that is doubtless highly appreciated by its recipients.

A NOVEL and simple method of obtaining a magnesium flash light, is to form a tuft of azotic cotton into a hollow nest and sprinkle the requisite amount of magnesium in and upon it. The edges should then be gently gathered together and twisted into a point till the whole assumes the shape of a pear. It may be suspended by a bit of wire in the position required over a receptacle of some kind, and ignited with a taper. This arrangement is said to work admirably in connection with double pictures on black backgrounds, in which the sitter may perform all the operations himself.

Mr. ROMYN HITCHCOCK, in a recent article in *Science*, calls attention to the surprising fact that most, if not all, of the important expeditions that have been fitted out for astronomical work in the past, as well as much of the work which is being done to-day in that line, is under the supervision of those who are not practical photographers at all. Cameras, lenses and all kinds of photographic apparatus have been procured for these expeditions, and only at the last moment has a photographer been engaged to use them. He cites the case where doubt has been thrown by eminent authorities on the correctness of astronomical negatives made on orthochromatic plates, and expresses the hope that at no distant day a photographic laboratory may be established for the study of purely scientific photographic chemistry. When this is done, he believes that we may be better able to make practical application of the latest and best knowledge to spectrographic and astronomical work.

Dr. J. J. ACKWORTH, in a paper on orthochromatic photography, says that he has produced plates sensitive to all the spectrum's rays, by the use of tincture of jaborandi in combination with silver nitrate and ammonia. He photographed the spectrum with these plates from A in the red, to and beyond H, the violet in the same plane. The results were, however, not entirely satisfactory, and the plates did not keep well.

LETTER FROM FRANCE.

By LÉON VIDAL, Editor, *La Moniteur de la Photographie*.

International Association of Photography.—Photographs of Grottos.—Phototints on Fabrics.—Photocollographic Reproduction of Engravings.—The Halo Once More.—Lenses mounted in Aluminium.—Photography with Manganese Salts.—Universal Orthochromatism.—Mr. Ives in London.

AT the Photographic Congress held in Brussels in 1891, a basis was adopted for the International Association of Photography, and steps are at present being taken to organize and increase said Association, the first meeting of which will take place in Belgium in the month of August next.

The French Society of Photography has joined the Association as one of the founders, although the object of the Association does not appear as yet to be clearly defined. In our opinion the plan adopted, although harmless, will not lead to any practical and useful result. Is it a sort of photographic freemasonry that is contemplated? We do not see what useful relations can exist between the photographers of different countries, nor what interchange of good processes they can accomplish other than the exchange of their respective publications. Such an exchange may be effected without having recourse to a grouping such as is projected.

Indeed, the promoters of this scheme and those that are trying to accomplish it, have been and are animated by the best motives. There being no doubt as to this, we shall not bring the least opposition to the execution of the plan.

We will simply say that we do not see the necessity of so many associations, be they national or international, in a special branch that does not give scope to such efforts. Photography follows its progressive course in a natural way without having to be pushed by the endeavors of a more or less numerous assemblage. There are in the United States of America and Great Britain a great number of photographic societies which are self-governing.

The centralization of all those societies in one National Association would prove to be an attempt against the isolated action of each one; the Central Committee would consider itself authorized to impose certain views more or less influenced by the directing Board, and the result would be that some means of action would be placed in the hands of a few in favor of their friends and of themselves and to the detriment of others. Such is the result most likely to ensue and for this reason we do not look with favor upon such new organizations.

It is needless to say that we will watch attentively the proceedings with the earnest hope of seeing our fears dispelled by the results.

Mr. J. Vallot, the well-known alpinist, has made some very interesting experiments on the best methods of lighting to be employed for photographing grottos, caves and other dark places. He has principally used Nadar's magnesium lamp and the magnesium flash. The Nadar lamp has given good results in places of some height, because the smoke does not immediately interpose between the camera and the view to be taken.

He has, however, employed, with greater success, the magnesium flash proper in the greatest number of cases.

As a general rule, a vast space in front of the lens is badly lighted, and it is difficult to remedy this defect by increasing the quantity of magnesium powder burnt, as in such case the light is too great on the nearest points; whereas, the farthest remain poorly lighted. In such cases, says Mr. Vallot, one must seek the remedy in the employment of a more intense developer.

As to the dimensions of the plates to be used, he believes it is best not to employ any larger size than 18 x 24 cm. Several experiments made with much larger plates have shown the difficulty of using materials of heavier weight and greater volume.

Mr. Villain has shown some very interesting results obtained by a photo-tint process, of his own invention, or at least inspired by Kopp's demonstrations. He employs a sensitive salt, the bichromate of ammonia, to which he adds metavanadate of ammonia, as this salt gives a more energetic action.

The tissue or the sheet of paper is soaked in the following solution:

| | |
|------------------------------|-----------|
| Bichromate of ammonia | 50 grams. |
| Metavanadate of ammonia..... | 5 " |
| Water..... | 100 c.c. |

It is then dried at a low temperature, protected from white light. It is next exposed under a negative, and, after a suitable exposure, the print is taken out and washed in running water so as to eliminate any trace of chrome salt not fixed. In this state the print can be put to dry for preservation. When proceeding to tint it, it is soaked in hot water and placed in the coloring bath, at a temperature of 90 degrees, and maintained at that temperature for about ten or fifteen minutes. The print is then transferred to a hot bath of carbonate of soda, or to a cold bath of chloride of lime with a few drops of hydrochloric acid. After thoroughly washing the print once more, the process is finished.

The coloring materials employed are principally derived from anthracine, such as artificial alizarine, isopurpurine, alizarine blue S, alizarine blacks S and R, gallo-flavine, purpurine, anthracine brown, alizarine orange, ceruleine S, galleine, alizarine green, alizarine yellow, alizarine maroon, etc., etc. A mixture of these coloring materials will produce the various shades.

Mr. Villain states that these tints present great resistance to the light and to the action of alkalies and acids.

The cost of production would not be high, because 10 or 12 kilograms of fabrics or paper can be tinted for three or four francs, which represents 1,500 or 2,000 13 x 18 cm. prints.

Mr. Balagny has shown to the French Society of Photography a collographic print, a reduced reproduction of a map engraved on copper. The fineness of execution is such as could not be obtained by any other process of printing. Indeed, photocolligraphy is the best process for reproducing line engravings. Nothing is lost or enlarged, as is often the case in phototype engraving.

Here, we are again brought before a new method for preventing halation. The author of this suggestion is not a practical man, but rather an idealist, as there are so many in photography. This savant finds that the halo can be avoided by smearing lampblack on the posterior objective lens. This has been seriously said before a numerous assembly, and some have appeared to think that there may be something in it. It seem incredible that people will persist in finding methods based on modifications bearing on the whiteness of the lenses, when it is so easy to find other means independent of the lenses and producing the same results. As to the lampblack, it gives a sort of yellowish-brown coloration and no little opaqueness, and it shows little ingenuity to propose such a preventive against the halo, when there are other well-known means of avoiding it; as, for instance, the dipping of ordinary plates in picric acid, as we suggested a year ago.

Here is our method :

The picric acid is dissolved in water at ordinary temperature to the saturation point. The acid is then neutralized by adding ammonia, drop by drop, using turmeric paper to determine the precise moment at which it ceases to turn.

The ordinary gelatine plates are then immersed in this bath for two or three minutes, and then placed to dry in absolute darkness.

If experiments are made with two plates, one treated with picric acid, as

above, and the other not treated, it will be seen that the halo will be defined on the latter, while the former is entirely devoid of it.

We have operated with a fragment of black paper having a round hole placed over each plate, exposed during three minutes at a distance of 50 centimeters from a candle.

Another method consists in coating the reverse side of the plates with collodion having in solution a mixture of chrysoidine and methyl violet. This coat can be easily removed at the time of development.

Mr. Cornu's process is difficult to apply, as the essences of cinnamon and cloves, suggested by him, are not at all siccative. It is, at best, a theoretical method which practically gives no satisfaction.

The tendency to employ aluminium in the construction of photographic apparatus is growing every day. The firm of Lemaire has exhibited in the Exposition at the Champ de Mars some objective lenses, the metallic parts of which are made of aluminium and are exceedingly light. Mr. Cadot has constructed a cane tripod, three-fourths of which is made of aluminium, and it is both strong and light. Mr. Discom has exhibited some cameras made of aluminium. In brief, we foresee the time when, owing to the use of this metal, the weight of all photographic outfits will be greatly reduced.

The price of the new instruments is at present rather high.

Messrs. Lumière Fils have finished their first publication in reference to the employment of manganese salts. Up to the present time nothing can be said as to the ulterior results of this interesting work from a theoretical point of view. It is to be seen whether any industrial application will come of it.

At present, the arsenal of known processes is vast enough, and it is needless to think of adopting new ones, unless they have some practical application or effect a great saving.

In the meantime it is well to have several strings to one's bow.

It is with orthochromatism, as with halation, that it is always brought forward as something new. Until now, all efforts have been made to prepare plates non-sensitive to red. However, it is possible to have plates sensitive to all the radiations in convenient relation to preserve the effect of relative values.

Plates made sensitive to yellow and red, by means of cyanine, can be made non-sensitive to blue and violet by immersion in a picric acid bath as explained above.

Thus can plates be obtained more sensitive to refractive radiation and less sensitive to active radiation. Why is not this method adopted? We have made successful experiments with it, and published a report of the same.

The presence of Mr. Ives in London, has given rise to a discussion of the processes adopted by him, and in the controversy, he, Messrs. Vogel and Mr. Scott have taken part, each claiming such and such feature of the invention.

In our opinion, orthochromatism, as employed by Mr. Ives, cannot be properly considered as his invention.

As to polychromatic projections, we vainly seek the difference in principle between his process and the suggestions published in 1869, by Messrs. Cros and Ducos-du-Hauron.

All communications for the columns of the BULLETIN should reach us on Monday preceding the day of issue, to insure their publication at that time.

STEREOSCOPIC PHOTOGRAPHY.

BY ELLERSLIE WALLACE.

I HAVE been much pleased to observe a gradual return of interest in stereoscopic photography. It would perhaps be difficult to give a reason why this beautiful variety of photograph ever lost its hold on the public to the extent that it did, but there is no doubt that it is now entering upon a new life, so to speak.

A good average size for each of the twin prints of which the stereoscopic slide is composed, is 3 inches square. Now, the question of size in stereoscopic work is a very important one, from the fact that the distance from center to center of the mounted prints must not exceed a given measure, while, if the pictures are trimmed small with a view to bringing the centers very near each other, the amount of subject included is too small. Practice has abundantly proved that the majority of healthy human eyes will have no difficulty in combining stereopictures whose centers are separated anywhere from $2\frac{3}{4}$ to $3\frac{1}{8}$ inches; supposing, of course, that a good stereoscope is employed. The above measure, then, of 3 inches between centers may be taken as the normal.

But when I spoke of the picture being 3 inches square I did not mean that it must be always square in form. Many excellent photographers prefer a print $3\frac{3}{4} \times 3$ inches, the extra $\frac{3}{4}$ inch often proving very convenient for including such subjects as are long and narrow. As short focus or wide-angle lenses are often resorted to in stereoscopic photography, this apparently trifling increase in the dimensions of the plate will be found in practice to confer quite a new power, especially in the artistic make-up of out-door views. Card mounts for the 3-inch square pictures should measure $7\frac{3}{4} \times 3\frac{1}{4}$ inches; those for the large size, 8×4 inches.

The size of the plates on which the negatives are made will, of course, determine the size of the camera, and, thus, the weight and portability of the outfit. The best size of plate for stereoscopic purposes is 8×5 inches, but as some operators might consider it extravagant to use so large a size, I may remind the readers of the BULLETIN that a plate measuring $6\frac{3}{4} \times 3\frac{1}{4}$ inches was for years the standard. I have a friend of long experience in the art, who, within the past month, procured himself an outfit for this odd size on account of its lightness, purposing a trip through the far western portion of the United States. But an odd size like this is awkward, from the difficulty of obtaining plates or films cut accurately to the measure. Standard list sizes, like 5×7 and 5×8 inches, are free from this objection, and the difference in price for the extra inch in size might be worth considering if much work were done. Intermediate sizes, such as $7\frac{1}{4} \times 4\frac{1}{2}$ inches, which was once very popular in England, have now been given up.

Most photographers are aware that after a stereoscopic negative is made, either the negative itself must be cut in two and the right and left sides reversed or transposed, or that, if the negatives be not cut, the prints from them must then undergo that operation. If the operator be afraid to risk cutting valuable glass negatives, he will find that the cutting and mounting of the prints becomes an expensive and troublesome matter—at least when any great amount of work is done. But the introduction of the flexible negative films has rendered this part of the process, formerly so troublesome and dangerous, quite safe and easy.

I should most strongly advocate using films entirely for stereoscopic work for this reason, apart from the saving in weight and bulk.

When the negative is cut, care must be taken to bring the exact centers of each half to the proper distance from each other when they are mounted or transposed, and to keep them also in a perfectly straight line transversely. On plates or films of the larger sizes previously spoken of, the margins of each half, when cut apart, will necessarily go to waste, and every care must be bestowed upon getting the same amount of subject included in each half. If one of the halves contains a quarter of an inch more of the right-hand side of the subject, while the other half has the same amount more of the left side, both margins will be wasted when the print is put into the stereoscope, and the size of the picture reduced accordingly. Bearing in mind that correctness in the prints will depend upon the proper trimming and mounting of the twin negatives, it is needless to give further caution as regards accuracy.

If it be preferred to trim the prints and not to cut the negatives, of course the same cautions must be observed with each print; and it is well to mark them R and L before cutting apart.

The labor and inconvenience of attempting to make transparent glass positives from uncut stereo-negatives are more than the thing is worth. But with properly cut and mounted negatives, no results produced by the photographer's art are more beautiful and better repay the labor bestowed. In my last article in these columns I spoke at length on the subject of these stereo-glass positives. Supposing that anyone owned a large number of valuable stereo-negatives on glass which he feared to risk cutting, it would be worth while to reproduce the negatives and cut the duplicates. At least, this would be true for any kind of commercial photography.

When a first-rate outfit for stereoscopic photography is desired, it will not do to be to economical in the matter of lenses. I should advise four sets of twin lenses of respectively $2\frac{1}{2}$, $4\frac{1}{2}$, 6 and 8-inch focus. It will be found in practice that the greater part of the work could be made with the $4\frac{1}{2}$ -inch, which corresponds most nearly to the diagonal of the 3-inch square picture. But for buildings in confined situations the $2\frac{1}{2}$ -inch would be just as indispensable as the 8-inch would be for very distant views, where even the 6-inch would make things too small to be effective when seen in the stereoscope. In the choice of lenses for stereoscopic photography the same general rules hold good as for single pictures. Landscapes, pure and simple, are, perhaps, best made with the inexpensive single-view or meniscus lenses, while for subjects of any kind in which rigidly straight lines or right angles occur, rectilinears or doublets will be necessary.

It not unfrequently happens with the cheaper and commoner sorts of lenses, that the so-called "matched pairs" of equal focus are not so in reality, and much inconvenience is experienced in consequence, the two halves of the twin negative being unequally sharp. Sometimes the trouble can be gotten over by adapting a ring cut out of cardboard between the flange of the lens and the wood-work of the camera, thus increasing the focus of either lens one-twelfth inch, or thereabouts. For single lenses and some doublets this plan would answer, but sometimes pairs of double combination lenses will be found that can only be made to work by interchanging the combinations; as, for instance, by transposing the back lenses of the pair.

If old-fashioned portrait combinations of the one-sixth or one-fourth size are used, it is well to remember that their front lenses, when used alone, will make good landscapes. The position of the lens must be reversed, however; that is, turning the flat or rear surface towards the view, and adapting a proper-sized stop in front at a distance equaling one-fifth of the focal length. The focus of a front lens thus used alone is about double that of the combination.

As I do not wish to consume space in speaking of photographic and chemical matters, which are precisely the same for stereoscopic work as for single pictures, let me proceed to another portion of the subject which is at once more interesting and more instructive.

Stereoscopic vision is possible only when both eyes are used in regarding objects. The convergence of the lines of sight produces the effect or appearance of solidity in objects when vision is normal. Either eye alone will not accomplish the same purpose. But from the fact that we all gradually contract the habit of depending upon one or the other of the eyes during temporary interferences of function of its fellow, many persons would thoughtlessly boast that they could see about as well with one eye as with both. But a simple experiment will show that this is far from being the case, and at the same time prove that both eyes are necessary for the proper stereoscopic perception of objects. Let one eye be gently held closed; then walk across the room and try to pick out any particular flower from a bouquet on a table there. The first attempt is almost sure to end in failure, though repeated trials will make it possible. The experiment may be varied and made very amusing by standing a full box of matches in an upright position, and then having pulled up one match till it projects slightly above the rest, to ask a friend to close one eye and walk across the room and get it. I may say that in making the experiment myself I failed twice in succession, each time missing the match by fully 6 inches.

Now, the popular idea of the stereoscopic camera is, that it is a binocular or twin-lens instrument; so it is, in the modern form; indeed, for all subjects that move or have life, it must necessarily be so. But, on the other hand, excellent stereographs of still life, architectural subjects, etc., may be made with the older form of stereoscopic camera which consists of a single small camera with an oblong plate-holder. The camera carries any ordinary lens, and is arranged on a long board, so that, an exposure having been made on one end of the oblong plate, the camera is shifted over to the other end of the board, and a similar exposure made on the other half of the plate. Guides at both ends of the board or table ensure the proper centering of the images on the ground-glass. The distance which the camera moves between the two guides depends upon the distance of the principal object from the camera. For instance, in taking a landscape comprising distant mountains with important objects close in the foreground, the camera may be moved about 12 inches for a foreground 75 feet away. The resulting negative would have all the foreground objects very strongly relieved against the distance. But a portrait at a distance of say 20 feet would be a caricature if the camera were moved so much. Half the distance, or even less, would be sufficient. An old custom used to be to give an inch of separation between the exposing points for every 3 feet of distance up to 40 inches.

It is but fair in this connection to call to mind the fact that stereoscopic pictures made in the above manner would probably be criticised now-a-days as

showing excessive relief. Our eyes have become accustomed to the flatness of the ordinary stereo-picture made in the binocular camera with a distance not exceeding 4 inches at the uttermost between the lenses. In fact, for groups of people in medium-sized rooms a separation of 3 inches between the lenses is enough. It is a cardinal principle in stereoscopic photography that the greater the distance of the subject from the camera, the greater must be the interval of separation between the lenses; or what amounts to the same thing in the case of the single camera, the greater must be the distance between the exposing points.

Those who have never experimented in stereoscopic photography could spend a spare hour to advantage by making a trial in this way. Select an upper window in the house from which a distance of half a mile or more can be commanded, and screw a seamstress's lapboard to the sill. Set a small camera at the left-hand side of the board and focus upon some principal object in the middle of the plate. Now, having marked the exact position of the camera on the board with a pencil, shift it over to the right side say twelve inches or so, bring the same principal object into the center of the ground glass, and again mark the position of the camera. Two plates in an ordinary double holder may now be exposed from the two positions, remembering that the one exposed on the left side must be used as the right half of the double negative. By altering the distance it will soon be seen what wonderful effects can be produced, and the life-like effect of views made in this manner can not fail to delight those who are familiar only with our flatter results as made at the present time.

Another interesting experiment for those fond of sailing at sea may be made by exposing on a coast line from a distance of say 5 or 10 miles. One plate may be exposed, the spot marked by a float, and the other one from a new position several yards to the right or left. In all these trials the same principal object must be brought accurately on the center-spot of the ground glass.

The faculty of binocular vision by which the eyes can combine the stereo-picture without the aid of the stereoscope, can be quite readily acquired by some persons, while others can never learn it. Hold a stereo-view at arm's length level with the eyes, and look fixedly at the opposite wall of the room for a few moments, then gently drop the eyes to the picture when the two halves will be seen to move toward each other and coalesce. Do not persevere in the attempt more than a few moments at a time, or the eyes might be permanently injured.

Before concluding, it will be well for me to say to those new at this work that, in selecting subjects, all very strong lights or flat surfaces like roofs of houses, heavy foliage, paved streets, etc., etc., should be avoided as tending to create a "snowy" effect in the picture. In developing, never push the density too far, but leave the negative quite soft, so as to yield prints that might be called rather wanting in brilliancy. There will then be none of the ugly snow-like effect. Take care to develop the two sides of the negative equally dense, and make the prints of equal depth and tone; and in selecting the point of view, be sure to keep the camera level transversely, otherwise the centre of one side will be higher than that of the other and cause much trouble in mounting the negative or prints.

THE APPLICATION OF ART TO PHOTOGRAPHY—No. 4.

BY H. P. ROBINSON.

It is always surprising to me that so many otherwise good landscape photographs are taken without the one thing that would make them into pictures—a figure. It is distressing to an artist to see good material wasted, and nothing is more sad than to look over an exhibition and have thrust upon you so many wasted opportunities as appear upon the wall—so many “might-have-beens.” Nearly all of these neglected chances consist of photographs of beautiful subjects that, with very little trouble, might have been made into real pictures. The majority of them are landscapes that want interest, and that interest might have been easily given by the addition of one or more figures, appropriate in pose, costume and position. But is the addition of figures so easy? Apparently not, if we are to judge by the attempts that come before us, and it is no wonder that writers have been found to denounce the use of figures altogether, for the reason



CUCKMERE HAVEN.

that they are usually employed so badly. Yet this is escaping a difficulty by a miserable evasion, instead of achieving victory by a worthy fight. When a lady asked Dr. Johnson why he had given a wrong definition to a word in his dictionary, he replied, “Simply ignorance, pure ignorance, madam!” and that is the matter with our photographers, who find that landscapes are so much better without figures; but they do not confess as the candid doctor did. Yet the necessary knowledge is not difficult of attainment.

There are, undoubtedly, some scenes in nature which are better without life; others that will do without it; but nearly all scenes are made more interesting by its presence. It need not always be human nature—animals are often better and more appropriate. A painter may compensate for the lack of figures by his clever handling or color; but the photographer has no equivalent to offer for these attractive qualities, and has to be content with a black and white representation of nature, and a manipulation that has now become as easy as reading and writing; and if he can offer nothing better, his work remains “a mere pho-

tograph." The attainment of excellent manipulatory skill, now-a-days, does not rise above the merest commonplace. If he wants to become distinguished, he must give us something of his own. He must show us that he has ideas and feelings; must make it evident that he has something to say, and say it. Nearly the only outlet in our art for talent is in selection and arrangement; but here, fortunately, the art has a wide horizon. Now, the proper and pictorial addition of figures to landscape does not require genius, but it does call for observation and study, with the addition of that common sense which everybody is supposed to possess. Above all, every photograph of any pretension should have the author's individuality stamped upon it, and I don't mind saying, much as I object to eccentricity, that even a little of that, so that it is your own, is better than remaining among the ordinary spoilers of plates. Not that eccentricity alone will do, but the artist must have some "Ego in his Cosmos," and, if he would succeed greatly, he should take pride in his work and believe in himself—within limits. He should have ambition, but not vanity. It is not often the very humble succeed; few believe in them, and they give up too soon. But I am afraid this is not the morality we learn in the copybook! I have known reputations made by eccentricity, unbacked by talent; but they all ended in fiasco, followed sometimes by others working the eccentricity into sense, and succeeding with it. This has even happened in our own art.

The study necessary is to be found in a few of the most simple rules of art, those most useful to the photographer being balance and breadth, to which all other rules minister. We will begin with breadth.

An ordinary photograph of a simple landscape often looks monotonously even all over. There is nothing for the eye to rest on, nor any one part or object to attract the eye more than another. The photographer feels this instinctively, and this is, I fancy, why he nearly always searches out some object to exercise his art upon: a church, a castle, or other building, or a waterfall. The reason for this is, although he does not know it, that such subjects usually have more breadth than the ordinary unselected jumble of trees and roads and fields. Without breadth, a photograph may be beautiful in its separate parts, but it remains a collection of separate parts; to become a picture, it must be massed together and simplified into one harmonious whole on which the eye can rest with pleasure. The eye is distressed by scattered masses, and soothed by breadth of light and shade. All lights and shades, which are interrupted and scattered, are more irritating to the eye than those which are broad and continuous. This does not mean that there should be no extreme contrast in the light and shade of a picture, as I shall presently show. It may be objected that the photographer has so little control of his subject that he cannot always obtain the most desirable qualities, to which I can only reply, that although it may not always be possible to get what you want, yet knowing what is pictorial, and the causes of pictorial effect, will greatly assist you in getting it. Knowledge will help you to select; to choose the most suitable light and time of day; and, most valuable of all, it will teach you what to reject. If all photographers had this knowledge, one would be saved the infliction of half the photographs taken, and the rest would be better.

It is always of value to inspect a scene at different times of the day, and study the cause of beauty or the reverse under different aspects. A scene may look very ordinary indeed at midday, and very poetical by twilight. Analyse

the cause of the difference. I think you will find that the beauty partly arises from the massing of the light and shade, and the suppression of detail. Do not think that I am going to suggest any unnatural method of suppressing the detail of nature, such as putting the image out of focus. These dodges have never been quite successful. Subordination must be brought about by nature herself—gently assisted, perhaps, by the artist—and you must take advantage of what she offers you. The aspect of a scene alters every hour of the day, and should be watched, and the artist has often the chance of suppressing the surpluses of nature by selecting his opportunity and getting objectionable parts in shadow. There is nothing incompatible with breadth in definition, as insisted on by some writers; but it is better to have breadth without definition than definition without breadth.

Balance and contrast are the other essential elements of pictorial composition. The various forms of balance and the means by which they may be attained are infinite. A figure, a boat, an animal, a wheelbarrow, a trunk of a tree or a log of wood; anything may be turned to account by the ingenious artist, and the weak spot in your composition that wants support will occur instantly to the experienced photographer. The introduced object should have its function. It should fill a weak place, balance the leading lines, or throw back the distance.

Nearly allied to balance is contrast, which may be described as the opposing of things of different aspect to each other, so as to bring out the fullest and best effect of each, or for the enhancement of the principal of the two, such as the position and variety of heads, youth and age, light and shade. It would require a large number of illustrations to show the great variety that balance and contrast can assume, but there are several works now published on composition to which I must refer you. If you get hold of the leading ideas of balance and breadth, you will soon find means of applying them.

It is not enough that a figure should be possible in the scene, or, indeed, in some sense belong to it. To be a complete success, it must go further, and be in entire harmony with its surroundings. There should be a unity of purpose in every part; one leading idea must be maintained; there must be no confusion. It is difficult to prevent some figures looking conscious and stupid, but it can be done. Try to be thankful for a difficulty, there are not many real ones in our art. It is not unnatural for a figure to look at the camera, yet it is seldom done without giving the effect of being done by the neglect of the photographer to give better instructions, and staring figures are to be found whenever figures are introduced into common photographs. It would be well to avoid this until you have attained great skill in posing. If you find a figure you have asked to help you looking very stiff, you will almost invariably find that he or she is standing equally on both legs, a pose rarely adopted except by very young children, old people, and those who are nervous. A word or two should put the figure at ease.

The illustration is an example of what may be done for an otherwise indifferent subject by the addition of a figure. I have selected it because it also illustrates breadth and balance, and because it has some faults that may be useful as a lesson. The breadth consists, not so much of light and shade, as of broad masses of forms. The breadth of wet sand reflecting the white chalk cliff is a great element in the repose of the scene. The rocks in the foreground support

the composition and throw back the distance, while the figure adds life and balance. Being darker than any other part against the gradations behind it, the figure comes in sharp relief and gives space. The great fault in composition is in the shrimp net. A little alteration would have made the top of the framework of the net tilt the other way, contrasting instead of being in a line with the leading lines of the cliffs. The alteration would also have made the net cut the line of the horizon, breaking up the horizontal lines which are too prominent, and if the camera had been lowered 6 inches, the man would have been set higher, and the effect improved. I should have preferred the shrimper a thought more to the right, so as to have been a little clearer of the distant termination of the cliffs.

Now, try to imagine the figure away, and what becomes of the picture? Nothing but the ordinary photograph would remain.

A NEW METHOD OF PHOTOXYLOGRAPHY.

BY PROF. ALEX. LAINER, *Vienna*.

PHOTOXYLOGRAPHY comprises a number of photographic methods for the purpose of producing pictures upon boxwood-blocks to facilitate the cutting of the same. The xylographer changes the half-tone picture to a line drawing.

Besides the direct printing process, for which a reversed negative is required, transfers of photo-lithographic copies, reversed prints of Lichtdruck plates, and the transfer of collodion films have found application.

Most frequently the direct printing processes are used, but the platinotype process, the blue print and the Lichtdruck process can be employed as well as the silver processes, provided the pictures obtained therewith are in conformity with the requirements of a photoxylograph.

These comprise the following points :

First.—The film on which the picture is, has to remain intact, when worked with the engraving tool ; that is, it must not tear to pieces, break or crack.

Second.—The drawing must have a distinct, clear and sharp expression, and should possess, in general, the character of a pencil sketch, as is generally executed for such purposes, upon a thin white ground.

Third.—The ground color should not be put on too thick, so that the engraving tool may penetrate easily.

Fourth.—The finished picture must be completely fixed, so that it will not dissolve afterwards, and also that the block will suffer no coloration; further, the picture must not rub out too easily.

Fifth.—The wood block must suffer no changes in size or form during the photographic manipulations.

Wood blocks exposed to moisture during photographic operations should be coated on the sides, as well as on the reversed part, with hot paraffin, or shellac varnish. The surface I generally coat with a rubber benzine solution ; an unequal distribution of the paraffin gives rise to the formation of spots.

After the wood block has been prepared in this manner, the laying on of the ground-color takes place.

For this purpose salted albumen is ground together with zinc-white and water, after the known methods ; the paste is spread upon the block, and with the palm of the hand distributed to a thin and uniform coating.

By another method a 1 to 2 per cent. gelatine solution or gelatine-soap solution, with a little zinc-white or white-lead, is rubbed with the palm of the hand upon the surface of the wood block. Upon this is put a coating of albumen, to which has been added chloride of ammonia and citric acid. The sensitizing is done with a nitrate of silver solution, 1:10.

Without entering upon other more or less complicated methods, I will describe now the method discovered by me, which, in comparison with the known method, leaves nothing to be desired, as far as simplicity is concerned.

The waterproof-prepared wood block is coated with the following emulsion:

| | |
|---------------------------|--------------|
| Gelatine | 1-0.6 grams. |
| Chloride of ammonia | 0.6 " |
| Zinc-white | 30 " |
| Nitrate of silver..... | 10 " |
| Citric acid..... | 3-4 " |
| Water..... | 100 " |

For experiments it is best to make the following stock solutions:

| | |
|---------------------------------|------------|
| No. I.—Gelatine..... | 1 gram. |
| Water..... | 30-50 c.c. |
| No. II.—Ammonium chloride..... | 10 grams. |
| Water | 100 c.c. |
| No. III.—Nitrate of silver..... | 10 grams. |
| Water..... | 50 c.c. |
| No. IV.—Citric acid | 30 grams. |
| Water..... | 60 c.c. |

The several compounds are put into a mortar under continued grinding, in the following rotation:

| | |
|-------------------|----------|
| Solution I..... | 5 c.c. |
| " II..... | 1 " |
| Zinc-white | 5 grams. |
| Solution III..... | 8 c.c. |
| " IV..... | 2 " |

Solution III is gradually added by letting it run over the pestle.

Immediately before spreading of the emulsion, 1 c.c. hot water may be added if the emulsion should appear to be too thick.*

A 2 to 4 cm. wide, soft hairbrush is now steeped in the mixture, and the wood block is coated with the emulsion, moving the brush up and down in a parallel direction; the brush is then run over the coated surface once more, without putting it again into the emulsion. A badger brush, about 7 cm. wide, is now applied to make the film even, by letting the brush pass lightly over the surface.

After this process, the coating can be laid on so thin, if desired, that the rings in the wood can be recognized. But even if the covering is a complete one, the coating can be produced so thin that it will meet all requirements, according to points 1 and 3 above.

The so-prepared wood blocks dry very quickly, and can now be printed with a reversed negative. The negatives must be brilliantly developed. I use preferably film negatives, which facilitate the observation greatly during printing, particularly if fastened to the edge of the wood block with a little gum Elemi.

* A further addition of 0.5 gram citrate of potassium acts favorably, but is not absolutely necessary.

When using ordinary glass negatives I generally observe the progress of the print by turning the wood block at its longer edge, and with a little care a misplacing of the block from its proper position will seldom take place; the fastening of little balls of wax to negative and block facilitates a repeated and even placing of the same.

The printing lasts, according to the density of the negative, from 15 to 60 minutes in the shade, or 5 to 15 minutes in the sun.

The print so obtained is washed with water for a short time, and then a concentrated fixing solution is poured upon the same; after a short action the print is washed and a concentrated chrome-alum solution is poured on, after which, it is washed again. In place of the fixing solution a mixed toning and fixing bath may also be applied.*

The moisture adhering to the sides and the reversible side is dried with a cloth, and the block is placed upon blotting paper, so that all moisture is soaked up. The drying will now proceed quickly.

The finished print resembles a pencil drawing, and, when the negative is very brilliant, it is like an india-ink sketch.

If a picture which is too thin is intensified with a mercury solution and ammonia, red tones will be obtained.

The dry print is flowed with a thin rubber solution. The extremely thin skin protects the delicate picture film from rubbing off.

[From *Deutsche Photographen Zeitung*.]

THE EIKONOGEN DEVELOPER IN THE HANDS OF THE PROFESSIONAL PHOTOGRAPHER.

BY R. HAUSDORF.

MORE than four years have now passed since Dr. R. Andresen's eikonogen was first put on the market by the Actien Gesellschaft für Anilin Fabrication in Berlin.

Practice has evidently shown the superiority of this new developer, though some failures have been obtained at the beginning, in consequence of which the new product has been by some put aside.

The present article is to explain these unfavorable results by some cases of the simplest nature which have often been observed in practice, and, at the same time, to draw attention to some mistakes which, notwithstanding the utmost exactitude applied in the laboratory of the photographer, can take place while their causes are generally unknown to him.

He thinks he has used the best chemicals for his experiment, the preparations have been mixed according to the directions, and when, in spite of all this, no good results could be obtained, it must be the fault of either the developer or the dry plate. He makes the experiments, perhaps, once more with another kind of plate, and if even then the new developer does not come up to his expectations, there is no doubt that "the new stuff is no good," and who of his colleagues would not agree with his opinion?

But, nevertheless, he may be wrong, and experience has shown how often this has really been the case.

* Before fixing, the picture film may be flowed with a chloride of sodium solution, which changes the free nitrate of silver into chloride of silver.

Another may have seen, perhaps, one of his colleagues succeed fairly in his experiments, but, though he himself has the same receipt in hand, he cannot get the same good results. He may ask himself why he should not be able to obtain the same effects as his colleague does, but he has no time to investigate the causes of his failure. Besides, the faults appearing may be of a mere chemical nature, the knowledge of which is out of his line because he is not a chemist, but a photographer who has to confine his attention to other items.

Now, as many of the alleged cases have been related to me, I think it might be useful to many a photographer if I give him some hints of the directions in which one is inclined to make mistakes.

Let us consider first the receipt given by the Actien Gesellschaft für Anilin Fabrication :

No. 1.

This first formula is generally preferred by the portrait and landscape photographers ; first, because it is only one solution, which is always ready for use and permanent as well, and then because this solution is strong enough for the shortest exposures and can be perfectly adapted for time exposures by a mere dilution with ordinary water—

| | |
|---------------------------------------|------------|
| Sulphite of sodium, crystallized..... | 120 grams. |
| Carbonate of potassium (pure)..... | 50 “ |
| Eikonogen, pulverized..... | 30 “ |

is dissolved in one liter of boiling water in the following manner :

For boiling the water use a well-enameled iron pot (a glazed clay pot will also do), pour in the measured quantity of distilled water and then let it boil. In the meantime weigh the above-named chemicals (120 grams sulphite of sodium, crystallized, 50 grams carbonate of potassium, 30 grams eikonogen, pulverized), mix them together on a large piece of paper, and then pour this mixture at once into the boiling water, stir it until all is dissolved, and then remove the pot with the now-ready developer from the fire. When the solution is somewhat cooled, pour it—if possible, while still warm—in well-cleaned bottles and cork it up tightly. The best way to preserve the developer is to keep it in beer or seltzer-water bottles with stoppers.

Many use instead of this concentrated solution the separate solution of formula

No. 2.

(1) Two hundred grams sulphite of sodium crystallized dissolved in three liters of cold or hot water, add 50 grams eikonogen and shake well till thoroughly dissolved.

(2) Dissolve 150 grams cryst. soda in 1 liter of water. For use, mix of—

| | |
|------------|----------|
| No. 1..... | 3 parts. |
| No. 2..... | 1 part. |

As, however, the solution prepared according to Formula No. 1 is generally preferred, owing to its great simplicity, I will refer to this especially in the following paragraphs.

Most frequently the mistakes are caused by using chemicals which are either wrong, or have become useless.

For instance, instead of sulphite of sodium, sulphate of sodium (Glauber's salt)

has been asked for. Instead of the crystallized sulphite of sodium, the dry pulverized sulphite of sodium has been supplied, which is about twice as strong as the crystallized, and of which, therefore, 60 grams per liter would be sufficient. Another received apparently sulphite of sodium crystallized, which was, however, weatherbeaten, and therefore quite useless for the purpose of developing.

It was about the same thing with the potassium and soda. Especially with the latter there is great danger of obtaining unfavorable results. As a rule, the photographer gets the chemicals which he wants for his trials, and of which he has no stock, from the nearest druggist or chemist. Now, it has happened repeatedly that, instead of the carbonate of sodium, he received bicarbonate of sodium. Afterwards, the druggist made the excuse that, every day, people are asking for carbonate of sodium (for medical use), while they always mean the bicarbonate of sodium. From this point of view the man was right, and the mistake was excusable.

I could state a great many more examples of similar cases, but this, I think, is sufficient, and we had better proceed to consider the question:

What must be the condition of the chemicals?

(1) The sulphite of sodium must appear clear and glassy in the fracture of the crystals. By lying too long in the air the sulphite easily gets weatherbeaten. It falls to pieces and forms a lumpy substance. Such sulphite of sodium ought not to be used, even if it should contain some good crystals.

There is, besides, on the market a dry sulphite of sodium, the effect of which is nearly twice as strong as that of the crystallized sodium, and, of this, about 60 grains per liter would be sufficient. It is advisable, however, to use only the crystallized sulphite of sodium.

It has also occurred sometimes that sulphate of sodium (Glauber's salt) has been asked for instead of the sulphite of soda. It is, therefore, necessary to pronounce distinctly the word sulphite.

(2) The carbonate of potassium must be chemically pure and free from chlorides. It forms a white crystalline powder, which is very soluble, and dissolves when only exposed to damp air. I would advise that you get from the seller the guarantee that the carbonate of potassium is really chemically pure and free of chlorides, as it would be too much trouble for the photographer to examine the quality of the potassium himself.

(3) The soda, or sodium carbonate, is used only with receipt No. 2 (separate solutions), and the crystallized product used in every household is sufficiently pure for the purpose. Take a large lump and cut it into pieces before dissolving it. If anybody should prefer to use a particularly pure product, he must be careful in purchasing that he does not ask for or receive bicarbonate of sodium instead of carbonate.

(4) The eikonogen, or, in English, picture developer, is the sodium salt of amido β -naphthol β -monosulphonic acid, and was placed on the market by the Actien Gesellschaft für Anilin Fabrication about one year ago in form of a white powder. The discoloration in the substance which was formerly often observed has not appeared of late. We think that this amelioration has removed all objections, and hope that this excellent developer will find permanency of favor in the near future. Providing the preparations have been properly performed, you can now proceed to develop.

THE DEVELOPING WITH EIKONOGEN.

In the solution prepared according to Formula No. 1, the photographer has got a solution ready for use, but concentrated. Now, I know that at this point, many a photographer stops at the question : How to use this developer for the different kinds of plates ; how to handle it with over or under exposures, and is the plate which I use fit at all for eikonogen ?

To this I can answer, that all makes of dry plates can be used with success with eikonogen, as has been proved to me in hundreds of cases by practical photographers.

The first condition is that the solution be adapted to the plate. Adapted ? many of the readers will say ; how should I be able to adapt this ready-made solution ? I am going to answer this at once.

It must be supposed that the alkali used for developing (in this case the carbonate of potassium) strengthens and covers the plate and produces a sensitizing effect.

It follows, and has been confirmed by practice, that by using too much of the potassium, the developer will work very rapidly and at the same time very deeply, and the strongest lighted spots will be sufficiently covered before the shadows, which cannot be waited for, as the lights are already dense enough. The contrary will occur if too little alkali has been applied in proportion. The picture will then appear but slowly, remain faint, and gain hardly any density.

In the second place, the wishes and taste of the photographer come also into consideration. The one wants soft negatives ; another one, perhaps, is obliged, in order to meet the wishes of his customers, to develop harder. Another one, again, has only to develop landscapes. Still, the majority of the photographers do not use only one single make of dry plate, but two or three various makes of a different sensitiveness, and, besides, the local circumstances are different everywhere.

It is evident how manifold are the conditions which the developer is expected to fulfill. But, to satisfy all these expectations, it must be adapted to them.

Now, as it is impossible for a developer to adapt itself to so many conditions without varying, it would be necessary, so to speak, to make out a special receipt for every single case. This would naturally cause too much trouble. As, however, the photographer understands how to vary, as is proved by his using the oxalate developer, it is sufficient to give him a hint where and in which way variations are to be made with the eikonogen.

Formula No. 1 represents a developer which can be adapted to all kinds of plates, even to those which are most sensitive to alkalies, as has been undoubtedly proved. Providing the time of exposure is correct, soft and richly modulated negatives are always obtained by diluting the concentrated developer with 1 to 2 parts of water.

Apart from the developer, a concentrated potassium solution (1 : 3, similar to a solution of bromide of potassium) must be kept. If, then, in developing, the picture should not come out quick and strong enough, add, by drops, a little of the potassium solution, as may be required.

If there is an appearance of over-exposure, dilute with water during the development, and add a little bromide of potassium. Keep the old eikonogen developer in a large bottle, and always begin developing with it, provided the

exposure in the studio has been normal. If the picture appears "correct," go on developing with this solution; if it appears "over," dilute with water; if "under," pour off the old solution altogether, and use fresh solution undiluted.

If the use of the first solution has shown that this formula adapts itself to the respective sort of plate, keep to it closely. On the other hand, modifications can be made very easily in the next experiment, and take, for instance, only 40 grams potassium. If the quantity first mentioned should prove too small, increase it correspondingly.

The great simplicity of this developer, as well as its great cleanliness in handling, and the advantage of having always a ready-made and permanent developer, must be appreciated by everybody.

For developing bromo-silver gelatine paper (Eastman, Dr. Stolze), dilute the developer at least five-fold. It is better, however, to add a special solution of the above-named quantity of sulphite of sodium and eikonogen, and add, during the development, the alkali (solution of potassium) by drops. It is acknowledged that by doing so, excellent results are obtained. For fixing the well-washed plates and papers, an acid fixing-bath must be used. Though the superiority of such an acid fixing-bath has often been dwelt upon, it is comparatively very little used.

Of the various receipts, the following has the greatest popularity: 50 grams of sulphite of sodium, cryst., are dissolved in 1 liter of water and then acidified with 6 c.c. (or 11 grams) conc. sulphuric acid. This done, add 200 grams fixing salt. When this is all dissolved, the bath is ready for use.

This order of succession must be strictly observed to avoid mishaps. If, for instance, to save trouble, the sulphite of sodium and the fixing salt are dissolved together, and the sulphuric acid added afterwards, the bath will be clouded in most cases, because, on adding the acid, "sulphur" will be separated.

The reasons in favor of this receipt are, in particular, that the neutral sulphite of sodium is at hand, because it is used for preparing the developer, and then that the sulphuric acid required can be got everywhere, while the bisulphite of sodium, used otherwise instead of these, is sometimes difficult to find.

The advantages of this bath are as follows:

- (1) By the acid fixing-bath the negatives receive a blue-black tone which is favorable for copying.
- (2) The film is tanned a little during the fixing, so that the use of alum is not required.
- (3) The bath prepared strictly as per description remains bright and clear, even after continued use.

[From *Jour. Phot. Society of India.*]

HALF-TONE PHOTO-BLOCK PRINTING.*

By COLONEL J. WATERHOUSE, S. C., *Asst. Surveyor-General of India.*

As the two blocks illustrating this number of the *Journal* are among the first illustrations of the kind produced in this country, a brief account of the way in which they have been obtained may be of interest.

The problem of breaking up the continuous gradation of the photographic image of half-tone subjects, so as to render it suitable for various methods of press printing,

was one which exercised the ingenuity of photo-mechanical printers for many years ; but so far as photo-block printing in half-tones is concerned, nothing really practical was done till Meisenbach, of Munich, brought out his so-called "autotype" process, in which the image was broken up by a series of lines crossing each other at right angles or thereabouts, and forming a number of dots and spaces varying in size and nature according to the depth of shade in various parts of the picture. The use of lined screens and network of various kinds for this purpose was not by any means new ; but, whereas, in most of the earlier methods proposed, the photographic image was merely cut up into small spaces by a network, or broken up by the wrinkling of a gelatine film, in Meisenbach's method there was a distinct independent gradation given to the image by the cross lines or dots, being of different thicknesses, corresponding to the gradation of the picture. This was an enormous advance, and although the actual methods of employing the ruled screens in use by different operators following Meisenbach's system may vary, the principle of obtaining this gradation by diffusion or diffraction is the same in all, the amount of it being regulated by the distance of the ruled screen from the original or from the sensitive plate and the amount of light passing through it, as well as by the relative proportion of opaque line and clear space forming the ruling.

Very little is known of the details of the various processes employed by European or American photo-block etchers, and so I propose to confine myself to the process we have followed here in Calcutta, which will stand comparison with much of the work done elsewhere, though not yet equal to the best, and may have some points of originality to commend it. It is based on the ordinary intaglio photo-etching process followed in Survey of India office, and has been worked out by my assistants, Mr. A. W. Turner and Mr. J. T. Meade, under my supervision, and has the great advantage of not requiring a reversed negative. The first necessity is a good ruled screen. We originally tried reproducing some special printed crossed lines I obtained from Europe. These did fairly well, and had the advantage of allowing screens of varying closeness to be easily and cheaply prepared from one ruled original, but it is very difficult to secure evenness of tint and freedom from spots and defects which mar the beauty and perfection of the screens and consequently of the images produced from them. Some trials were also made by Mr. Turner in the office of ruling screens on sheets of plate glass evenly coated with india-rubber dusted over with fine plumbago, which gives a very opaque film easily cut with a point in the ruling machine. While in Europe last year I obtained from America some glass ruled screens from two makers, one of whom produces his screens direct on glass, and the other by photography. Both of these kinds of screens have given much better results than anything we had tried before, and with one of the finest screens ruled on glass—150 lines to the inch, which Mr. Levy kindly sent me for trial—the process seemed to go almost automatically.

The usual way of using these screens is to place them in front of the sensitive plate, leaving a small space between, which may either be fixed or varied according to the subject to be reproduced ; or the screen may be placed in front of a transparency of the subject to be reproduced and a negative made in the copying camera. I have not yet been able to go into this subject myself, and so can say little about the best method of using the screens, and the effects that may be produced by various ways of working. The subject is a very interesting one, and I hope to be able to say more about it hereafter. The negatives are usually taken by the wet collodion process as giving the clearest and sharpest results, and have to be intensified in the same way as ordinary black and white negatives, so that the blacks may be nearly opaque and the clear spaces as transparent as possible. The best way of doing this is with copper bromide and silver nitrate, followed, if necessary, by treatment with hydrosulphate of ammonia. The negative should show an image in good gradation, but broken up into a network enclosing small points, varying in size and character according to the

amount of exposure received in different parts of the film. In the darkest parts of the negative, which represent the lights or white spaces of the finished print, these points have the appearance of small transparent dots joined by opaque spaces; and as the negative increases in transparency, corresponding to the increasing depths of shade in the print, the transparent dots increase in size and the opaque spaces decrease, till in the deepest shadows the distribution of light and shade in the dots and spaces is quite reversed, and the negative image is formed by very small opaque dots joined by transparent spaces, and, finally, in the deepest shadows of all, by complete transparency.

Having obtained a good grained negative, the rest of the process is very simple. The image may be etched on copper or zinc plates in various ways, using either a thin film of asphalt or of bichromated albumen, etc., as the sensitive surface. It must be noted, however, that if the image is printed directly on the metal surface a reversed negative will be required. Zinc plates seem to be ordinarily used for these blocks and offer more facilities for deep biting when necessary; but we have found thin copper plates in many ways more convenient, and we make them easily for ourselves by electrotyping from a highly polished copper plate. The plates we use are about the thickness of a stout card, quite flexible, and can easily be cut with shears.

The first thing is to fix a fine dust-grain of powdered asphaltum upon the clean polished surface of the copper-plate, just in the same way as is done for the ordinary intaglio photo-etching process. The grain should be very fine, so as to be eaten away during the etching of the image, but just suffice to hold down the gelatine image. A print is now taken from the grained negative upon the ordinary standard brown autotype tissue, transferred under water to the prepared thin copper-plate and developed in hot water in the ordinary way. A quantity of prints may be developed upon the same plate and etched together or separately according to the requirements of the various subjects. The pigment prints should be made in sunshine and require an exposure of about two minutes. After development, the images are dried off in the usual way with spirit of wine, and parts not requiring to be etched, as well as the back of the plate, are painted over with asphalt varnish to protect them from the etching fluid. Before etching, the prints should be carefully examined to see that there are no defective parts, and especially that the grain is crisp and sharp; the slightest want of contact in the printing frame will spoil the result.

The copper-plate bearing the gelatine image is now placed in a solution of perchloride of iron at 44 degrees Baumé, and the process of etching is carefully watched, the biting being allowed to continue for ten or twelve minutes after the first signs of action, or until the greater part of the image is etched; the plate is then placed in a weaker solution of perchloride at 40 degrees Baumé and left in this for another six or eight minutes until every part of the image has been eaten into the copper except the deepest shadows. The gelatine image is then washed off in a strong current of water, and the plate cleaned with ammonia and chalk. If the etching has been properly carried out, a perfect image in relief will now be obtained with every line and dot of the grained negative reproduced clear and sharp. One advantage of this mode of etching is that the grain is not underbitten; the finest lines and dots are always perfect, because, if the finer parts should be over-etched, the image is attacked by the perchloride on the surface without removing the gelatine film, as would be the case in etching an image in asphalt or fatty ink. The result is that the lights of the picture are slightly below the level of the deep shadows, but not sufficiently so to interfere with the printing; in fact, this may assist it by causing the deeper shadows to take up more ink than the lights, and so form a natural, graduated method of overlaying, so important in typographic printing. The plate now obtained, though fairly deep, is not sufficiently so for printing purposes, and recourse must be had to rebiting, which is the most important and delicate part of the process. For this purpose a hard gelatine or smooth rubber roller should be used, and the image is very carefully rolled up with an ink composed of good lithographic ink and black wax thinned down with sufficient lithographic var-

nish to just make it workable on the slab, the ink being as hard as possible. The black-wax composition is similar to that used for making electrotyping moulds and is made of

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| Spermaceti..... | 56 parts. |
| Stearic acid..... | 26 “ |
| White wax..... | 24 “ |
| Asphalt..... | 9 “ |

melted together.

With due care, the image is easily rolled up with this composition, and it forms such a powerful resist to the etching solution that a very thin film will be found sufficient to protect the image. After rolling in, the plate is slightly warmed over a gas stove and the back of it and the margins of the picture again painted over with asphalt varnish. It is then put into a 38-degree Baumé solution of perchloride of iron, and should stand about two minutes' etching; this will deepen the image considerably, but may have to be repeated a second, and sometimes a third, time before sufficient depth is obtained, care being taken that between each biting the plate is thoroughly cleaned with turpentine and benzole. A great deal can be done with the plate to improve it during the process of rebiting by painting out and biting only such parts of the plate as may require it; but this depends upon the requirements of the subject and the skill of the operator.

When the etching is quite finished, the plate is cut to the size required, leaving, as a rule, a narrow black line or border round the subject, and it is then ready for mounting. Mr. Turner has adopted an ingenious way of doing this which may be novel. The copper plates, being very thin, are fastened down to blocks of wood, type high, with strong bichromated gelatine, and hold exceedingly well, though zinc plates treated in the same way do not seem to hold so well. The back of the plate is first carefully cleaned with turpentine, and afterwards with a strong solution of caustic potash, in order to free it from all traces of greasy matter which might prevent adherence. It is then dried, and a sheet of white tissue paper is attached to it with a solution of—

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|------------------------|----------|
| Gelatine..... | 8 parts. |
| Potash bichromate..... | 1 “ |
| Water..... | 32 “ |

Upon the wooden block a sheet of thin drawing-paper is attached with the same solution. The tissue paper on the back of the plate, and the paper on the wooden block, are now thickly coated with the bichromate solution, and the two surfaces brought into close contact with each other and placed under pressure. A piece of oiled paper is laid on a sheet of thick glass, and the blocks laid face downwards upon it; a number of sheets of thick plate-glass are then piled on, and the whole left till the next day, when it will be found that the copper-plates are firmly attached to the wooden blocks and quite level. A proof is then taken, and, if necessary, the typographic images can be touched up with a roulette or graver to bring out lights, or with a burnisher to deepen shadows.

The printing of these blocks seems to offer no great difficulties, provided the wood does not warp and the surface remains level. The image, being broken up all over into a series of minute dots and spaces, offers a good support for the roller, and the images generally print very sharp and clear. The quality of the paper has, however, a very great influence on the result, and the best impressions are obtained on highly glazed paper. Eder's *Jahrbuch* for this year contains two illustrations printed from the same block by Meisenbach, one, on the highly glazed paper, being of a rich full tone, and almost as perfect in gradation of light and shade as a collotype print, while the other, printed on ordinary paper from the same block, is poor, flat and spotty

Enameled paper, as used for collotype, also gives good impressions, but they are easily damaged. There does not seem to be the same necessity for overlaying as with ordinary deep-cut blocks, though it is probable that a skilful use of this auxiliary might aid in producing the finest results a block would be capable of giving.

PLATINUM TONING ON MATT-SURFACE PAPER.

BY T. O. MAWSON.

[A Communication to the Newcastle-on-Tyne and Northern Counties Photographic Association.]

AT the present time there are so many different printing papers in the market that it is a difficulty with the amateur photographer to decide which process to adopt. The tendency at present is to obtain warmer tones on a rough or matt-surface paper. I hope to demonstrate to you this evening how very simply this is done.

We have all worked with the ordinary albumenized paper, and can, doubtless, produce a good print; and, as the working of plain paper is in every respect similar, I think you will all agree with me that this process is better suited to the amateur's requirements than any other. Very beautiful matt-surface prints can be obtained on any of the various brands of gelatino-chloride papers; but the manipulation of these papers is a little more complicated—the prints require to be passed through an alum bath, and then squeegeed onto ground glass, or (as demonstrated by Mr. Brown at our last meeting) rubbed with powdered pumice stone till the desired surface is obtained. These operations are, of course, not required if you start with the matt-surface paper. Toning takes only a fraction of the time required to tone albumenized paper with any of the usual formulas for gold baths. Blisters (the *bête noir* of the amateur) are unknown; there is neither albumen nor gelatine present to cause these objectionable comparisons.

The brand of paper I have always worked with is that made by Mr. Valentine Blanchard; he sends his paper out with a supply of toning solution sufficient for the paper. My own toning bath is made up from the formula given in Mr. Lyonel Clark's work on platinum toning, and I may as well mention here that the formulas I shall have occasion to mention later on are all taken from that same excellent work. I have tried them myself, so can testify to their working satisfactorily.

I will now briefly run through the operations necessary to produce a matt-surface platinum-toned print, and am sure, if any of you will take the trouble to sensitize your own paper, you will be amply repaid; you will find the home-sensitized paper prints much more quickly than the commercial article, and another great advantage is, you can select a paper with the necessary degree of roughness to suit the subject you are about to print. The paper I have used when sensitizing has been Whatman's drawing paper; this is an excellent paper for the purpose, and can be had in several grades of surface. The rough water-color paper is specially suited for large prints. It has only one objectionable feature, and that is, it is very porous, and before the end of the washing gets something like saturated blotting paper; great care is therefore necessary to prevent tearing or otherwise damaging the prints.

Having selected the paper, the first operation is to size and salt it. This is done in one operation, the paper being floated on a solution of chloride of ammonia and arrowroot, as follows:

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| Arrowroot..... | 180 grains. |
| Chloride of ammonia..... | 160 " |
| Water (to one pint)..... | 20 ounces. |

Or,

| | |
|---------------------------------------|-------------|
| Arrowroot..... | 180 grains. |
| Chloride of ammonia..... | 120 " |
| Recrystallized carbonate of soda..... | 240 " |
| Citric acid..... | 60 " |
| Water (to one pint)..... | 20 ounces. |

The arrowroot is made into a stiff paste with a little cold water ; then about fifteen ounces more water added ; then boiled till clear. When clear, it is removed from the fire, and when sufficiently cooled, the chloride of ammonia, dissolved in the remainder of the water, is added. This solution should be allowed to stand all night ; the clear portion is poured off into a suitable dish, and the paper floated on the surface of the liquid. I find Whatman's paper requires about three minutes' floating to be properly impregnated with the solution. After removal from the salting bath, the paper should be laid, face upward, on a level table, to allow the solution to be absorbed ; then hung up to dry. I find, if hung up to dry directly it is taken from the bath, that the solution runs down in streaks, and though not noticed when the paper is dry, unevenness of silvering takes place in consequence. It is as well to salt a good supply of paper when you are about it, as paper in this condition will keep any length of time. The back (or unsalted side) should have a pencil mark put on it for future guidance.

The salted paper is now ready for the silver, or sensitizing bath, made up thus :
Dissolve—

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|------------------|----------------------|
| Citric acid..... | 25 grains. |
| Water..... | $\frac{1}{2}$ ounce. |

And

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|------------------------|----------------------|
| Nitrate of silver..... | 60 grains. |
| Water..... | $\frac{1}{2}$ ounce. |

These solutions are made separately and mixed. The salted paper is then floated on the solution, care being taken that no air bubbles are between the liquid and the paper. Three minutes will be found long enough for the paper mentioned ; it is then removed from the bath and hung up by a wooden clip to dry. This operation must be performed by gaslight, or in the darkroom. Paper sensitized in this manner will not keep very long ; it is better to sensitize just as much as you require for present use.

Printing is carried on to about the same degree as with albumenized paper till there is a distinct bronzing in the deepest shadows ; when sufficiently printed, the prints are washed in several changes of water and toned in following solution :

| | |
|--------------------------------|---------------|
| Chloroplatinite of potash..... | 4 grains. |
| Nitric acid..... | 1 or 2 drops. |
| Water to..... | 2 ounces. |

On immersion in this toning bath, the print immediately begins to darken, and toning to the black stage is arrived at in about five minutes. If warmer tones are required, it is better to dilute the bath to 4 ounces with water. The action is then more under control, the toning action stopped as soon as the desired tint is obtained.

Fixing is conducted in the ordinary hypo bath ; 4 ounces of hypo to 1 pint of water made slightly alkaline by the addition of a few drops of ammonia. I find, however, this alkaline bath has a tendency to produce a warm tone, and if a black tone is desired I use the acid-fixing bath recommended for negatives, containing 1 ounce of bisulphite of soda and 4 grains of hypo to the pint.

After fixation the prints are washed in the usual manner to free them from hypo and dried between blotting paper.

Having now briefly run through the necessary operations from plain paper to finished print, I think you will all agree with me that this process is about as simple as any. You have nothing new to learn, simply print, tone, and fix with the usual intermediate washings, and you obtain a picture which will be "a thing of beauty and a joy forever."



Mrs. YOUNGWIFE—Bridget, why didn't you get that molasses I ordered ?

BRIDGET—Faith, and Oi tried mum, but there wasn't any in town.

Mrs. YOUNGWIFE—How do you know ?

BRIDGET—Because ivery sthore that Oi wint to had a soign out " N. O. Molasses sold here," and Oi didn't go in.

"BROMIDE ENLARGING."

BY FREDERICK PARK.*

[Newcastle-on-Tyne and Northern Counties Photographic Association.]

I NEED hardly dwell upon the advantages of enlarging, so as to be able to make large prints from small negatives. Few words are necessary to convince any one of the value of being able to make pictures, suitable for hanging, from negatives which can be taken in a very small camera, while the taking of such direct from large negatives requires a camera which many of us cannot afford, besides which the extra labor in carrying a 15 x 12 camera and slides about the country necessitates an amount of work which not only many of us would not care to undertake, but which in many cases is almost impossible. Besides, amateurs, at any rate, don't want large prints by the score, but, as a rule, like to have a few prints from their best negatives of such a size that they can be seen without a magnifying glass, and it is for them that my remarks will be specially directed.

A great deal has been said about enlargements as compared to direct prints; but although I do not approve of "fuzzy" prints of any kind, I decidedly prefer a good enlargement of any size above 12 x 10 to a contact print of the same size, and from a negative taken direct in the camera.

A good enlargement of, say, three or four diameters, which need not be overstrained, has a softness in it which gives it a charm not possessed by a direct print of the same size.

Very fine definition is not required in pictures of 15 x 12 or over, as in the small sizes, because when we look at a 15 x 12 picture we usually stand a few feet away so as to see the whole picture, while in looking at smaller pictures we view them much nearer, and finer definition is then desired.

As it would be impossible for me to-night to go through and describe all the processes of enlarging, which most of you already know, I will confine myself to giving you some of the results of my own experience, hoping it may prove of use to any who wish to try this branch of photography for themselves.

With regard to the negatives, I usually take quarter plates, as I find that they can easily be enlarged to 15 x 12, which is almost four diameters, without in any way overstraining, so as to cause "fuzziness," and as that is generally large enough for most amateurs, I think quarter-plate negatives have many advantages.

Of course, half-plates or whole-plates can be as easily enlarged as quarter-plates when daylight is used; but when artificial light is used, and a condenser is necessary, then quarter-plates are more easily dealt with, as the expense of condensers for larger sizes is a serious item.

After all, a half, or even a whole plate, is a small picture, and is more suitable for an album; and if we take negatives for the purpose of enlarging, we might just as well enlarge a quarter-plate as a half-plate. There is a slight objection to the use of quarter-plates, and that is when we enlarge them up to, say, 15 x 12 from a negative taken with an ordinary focus lens, the perspective is rendered incorrect; for instance, distant objects appear nearer than what they are in nature; but in picture-making this is, as often as not, an improvement, while, when they are not so much enlarged as, for instance, to 10 x 8, which is about two diameters, they are more correct than the original. As bromide enlargements are the most commonly produced, and are in most respects the easiest, I will confine my remarks to this class.

The simplest method is, of course, to expose from the negative direct upon the bromide paper, and when this is properly done, the results are hard to beat. There are other ways, namely, to make a transparency of the size of the negative by contact, and from this make an enlarged negative. Or make an enlarged transparency, and from this make a large negative by contact, and from this print your enlargement. These

latter processes are well adapted, when a large number of prints are required, as, of course, each enlargement can be printed in the printing frame and much time saved; but if only two or three are required, there is no need to go to this extra trouble of preparing an enlarged negative, as the first process will yield results which cannot be surpassed, and it has the advantage being simple, while the more processes you introduce, the more difficult it is to succeed.

Negatives for enlarging should be full of detail, and not too dense and sharp to the edges. I usually take them with stop f -32 and develop them without much bromide in the developer, just sufficient to keep them from fogging, as they should be quite clear.

Any amount of contrast can be had in the enlargement by using sufficient bromide when developing it. It is astonishing what excellent enlargements, with plenty of contrast, can be made from negatives without much contrast, while negatives with great contrast are unsuitable for enlarging. The only way to treat these is to subject them to a very powerful light, as a weak light, acting for a longer time, has not the same effect. The image being on the surface of the paper, the deep shadows get blocked up before the other parts are brought out, and show no detail in the denser parts, which is not the case in a negative or lantern slide, which is viewed by transmitted light, when the detail in the denser parts is easily seen.

Another advantage in using a small stop when taking negatives for enlarging is that you get more even negatives, so that the density at the center is not greater than that at the edges; whereas, with a large stop, more light strikes the center of the plate than the edges, and consequently the density is greatest in the center. Negatives suitable for enlarging make excellent direct bromide prints, if developed in the same way.

Either daylight or artificial light can be used. When daylight is used, various means can be adopted, but I think the best and simplest way is to place the negative toward a window, and photograph it, so that to do this you must have a light-tight box of the size of the enlargement, or, in other words, a substitute for a large camera. This does not require the room to be darkened, nor to have to work in a darkroom, and is, I think, a simpler method than having to block up a window, which is not always an easy thing to do, the camera taking the place of a dark room. This is best made with a large bellows, to one end of which is fixed the front for carrying the lens, and to the other end a frame is fixed, to which a dark slide can be fitted. A hinged door could be used, on which the bromide paper is pinned, but a dark slide is much to be preferred, as the paper can be shut up and carried to the dark room to be developed; whereas, if the paper is only pinned on a board, it would have to be developed in the same room, or the whole apparatus carried bodily away to avoid the light.

(To be continued.)

ANSWERS TO "A TOUCHING APPEAL."

WE are glad to acknowledge the receipt of the following amounts as subscriptions to the H. H. Snelling fund.

| | |
|------------------------|---------|
| C. D. Fredricks..... | \$10.00 |
| Alexander Beckers..... | 25.00 |
| F. W. Guerin..... | 1.00 |

Other subscriptions are promised, but the amounts have not yet been stated. Those given above have been received, and sent to Mr. Snelling. Our charitably disposed readers may send any amount they please, but send soon and help while you may.

OUR ILLUSTRATION.

THE frontispiece of this issue of the BULLETIN is from a silver print of Mr. R. Eickmeyer, Jr., who furnished the handsome picture called "Reverie," that we used as an illustration some time ago. "Reverie" was a charming production in every sense of the word, but, to our taste, "Evanescent Records" is yet better. Full of life and beauty as a picture, admirably produced as a photograph, it appears to us that we rarely have an illustration that contains so many points worth study and thought as the one before us.

ANTHONY'S Photographic Bulletin.

EDITED BY

Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by ARTHUR H. ELLIOTT, Ph.D., F.O.S.,
and a corps of practical assistants.

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E. & H. T. ANTHONY & CO., Publishers.

CLOUDS, TRUE AND FALSE.

Mr. VALENTINE BLANCHARD writes in the *Practical Photographer*: "In a recent photographic exhibition there were some examples of cloud printing which so outraged good taste that I would infinitely rather have had the old-fashioned monotonous white-paper sky. In one of the examples of bad taste there was a mass of heavy cloud over an expanse of water so calm as to be almost without a ripple, and, by contrast, so white as to look more like snow than water. At a distance the picture looked top-heavy, and one could almost imagine the frame had been hung upside down. In another example, the clouds had been printed over the distant hills, and completely spoiled an otherwise charming landscape. The prevailing fault appeared to be a tendency to print in the clouds too dark, and, in consequence, destroy the aerial perspective—so important to a good landscape. The necessity of true perspective in the clouds introduced must be insisted upon; their perspective must agree with the perspective of the landscape, for where proper attention has not been given to this most important point, the oddest effects have been produced. Frequently, the camera is pointed upwards in working for the

cloud negatives—probably to avoid some tree, or house, or telegraph post—and, in consequence, the clouds overhead are taken, and these clouds are printed into an extensive landscape; and thus, instead of a glorious perspective of clouds gradually receding—until, in the extreme distance, they lose form and melt in the horizon—a mass of clouds appears, far too large for the subject, and too strongly defined, and, therefore, completely wanting in aerial perspective. Of course, such a result produces anything but an agreeable impression on any one of taste who may happen to look at this most untrue and inartistic production. If the camera, when looking at the scene, is in a horizontal position, and is afterwards pointed at an angle of 45 degrees when taking the clouds to be introduced, what can result but such an effect as I have described? Whenever possible—that is to say, whenever there are clouds suitable to the subject—it is well to take two negatives, one for the landscape, and one for the clouds. In the first, the full exposure, so as to secure proper detail in foreground, should be given; while in the second, the most rapid of snapshots will be sufficient to secure detail in even the most delicate clouds. When this latter negative is developed, of course no proper detail in the landscape can be expected, but the proper combination of these two negatives will produce a perfectly harmonious result, particularly if the right effect has been patiently waited for.—*Photographic Work.*

PREPARATION OF PURE COLLOIDAL SILVER.—Solutions of ferrous sulphate (150 grams of the salt in 500 c.c. of the solution) and of sodium citrate (280 grams of the salt in 700 c.c. of the solution) are mixed, and poured into a 10 per cent. solution of silver nitrate (500 c.c.). Daylight need not be excluded, but it is advisable to divide the mixture into five equal portions, as small quantities can be dealt with more easily than large. At the end of half an hour the supernatant liquid is removed from the precipitated colloidal silver with a pipette, and the silver is thrown on to a filter (Schleicher and Schüll's No. 590 paper), filtered under diminished pressure, and dissolved on the filter in the minimum quantity of water; solutions may be thus obtained containing 20 grams of silver per liter. To this solution absolute alcohol is added with agitation until coagulation is perceptible, and, after remaining for several days, the colloid is filtered under a diminished pressure of 10–20 mm. on a Pasteur filter-tube, when it forms a beautiful, iridescent incrustation. Colloidal silver in this state of purity is soluble in alcohol, and cannot, therefore, be washed with this liquid to remove the last traces of crystalloids. By this method, a product containing only 0.3–0.5 per cent. of iron salts is obtained.—*Journal of the Chemical Society.*

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. Correspondents will please remember this. No attention will be paid to anonymous communications.

Q.—F. T. writes: I have just tried the "Columbian No-Gold Toning Solution," and I am very much pleased with it. Will you be kind enough to inform me how many prints (cabinets) can be toned in the solution from one bottle each No. 1 and No. 2? Will the addition of fresh solution to the one used be safe, or had it better be thrown away and a new one substituted? As the solution from one set only contains 4 ounces of hypo, of course it will only properly fix a given number, and that is what I wish to know.

A.—About 150 cabinets will be the limit for a bath of the amount you mention. It would be far better to discard the exhausted solutions than to attempt to patch them up as you suggest. You could never tell exactly the condition of your solution, and the results would probably be unsatisfactory.

Q.—W. D. K. writes: I began work with Darlot lenses, and have had no opportunity for experimenting with higher grade ones. I would like to know what the difference is, and how much finer work the better lenses are capable of, and what you would recommend for the different kinds of gallery work? I have a V. & S. half-size. Would it be better for medium-size cabinet heads than a 4 x 4 Darlot?

A.—The Darlot lenses of which you speak are undoubtedly good. The difference between them and, say, a Dallmeyer, is of degree only, and not of kind, and the work of each should be compared side by side to fully appreciate it. The better tools a workman has, the better, within limits, will be the quality of the work which he can turn out. We think the Darlot as good as the V. & S. one-half for the work mentioned.

Q.—F. W. H. writes: In the formulas given for the "Rapid Hydroquinone Developer, Solution A," no measures or weights are given. Are we to understand that "parts" are meant, or was it an omission? I would be glad to know, as I would like to try the developer.

A.—The formulas mentioned are to be read parts, and any system of weights may be substituted, provided that the substitution be carried throughout the formulas. For in-

stance, either ounces or grams might be placed after the figures, although this would result in rather an excessive quantity if ounces were used.*

Q.—M. E. S. writes: Please explain process of filtering developing fluid; also how to bring out one object larger than the other objects in pictures—viz., I wish to bring out a child larger than backgrounds. Can this be done with the camera?

A.—To filter the developing fluid, a glass funnel is fitted with filter paper so folded as to prevent any liquid from coming through except by passing through the pores of the paper. Consult the nearest druggist, and he will show you how to fold the filters. To make one object larger than another in a picture, bring the object to which you desire to give prominence in the foreground, that is, near the camera. Objects at a distance appear relatively much smaller than those near by.

Q.—W. P. C. writes: Can you tell me what causes the mealy appearance of the enclosed prints? Of late, we have had a good deal of trouble from this and would like if possible to have you help us out.

A.—The mealiness in these prints may come from dust in your silver bath, in which case filter it; from poor paper which has been improperly albumenized, too weak a fixing solution, or partly decomposed mounting paste. When do the small spots first show, before or after toning, mounting or burnishing? What kind of paper do you use? Let us hear from you in these respects and we can answer you more intelligently.

Q.—J. A. R. writes: Please let me know through the columns of the BULLETIN the cause of the dark spots on the enclosed print. The spots do not appear until after the prints are in the toning bath, and then the spots do not appear on all the prints, but only on some. Prints made from a sheet will show the spots, while others made from the same sheet do not show the spots. The same bath is used for all the prints and I never had any trouble like this before. They act just the same in a new toning bath. I mean the little black spots, not the silver stains, as they got on after the picture was toned; the result of handling with dirty fingers.

A.—These spots resemble very much those caused by getting pyro or hypo dust upon the print before toning. Is there not some way in which this may have occurred? See that the negatives from which you print are thoroughly washed, and that the receptacle in which you keep your prints before toning is perfectly clean.

Views Caught with the Drop Shutter.

A FIRE which broke out early in the morning in San Antonio, Texas, destroyed the building occupied by M. E. JACOBSEN, photographer, of that city. His loss amounts to about \$5,000, which was only partly covered by an insurance of \$1,750.

MESSRS. J. V. ESCOTT & SONS, photographic merchants, of Louisville, Kentucky, were burnt out last October, and we are pleased to receive a notice of their resumption of business at their old location, 521 Fourth avenue. Their quarters are new and commodious, and their stock embraces all that is latest in photographic apparatus.

THE lenses in two of the solar enlarging cameras of ROCKWOOD & CO., Union Square, this city, were allowed to remain uncovered when not in use, and the sun's rays becoming focused on some woodwork, started a fire which did some \$200 damage before it was put out.

THOMAS & LOGAN, photographers, of Logan, Utah, were burnt out early one morning, recently. The damage to stock and instruments was placed at \$1,800, while the insurance was only \$1,000. We understand that they intend resuming at once.

THE friends of Col. V. M. WILCOX, President of E. & H. T. Anthony & Co., will rejoice with him over the constant progress in science and in the profession of his son, Dr. R. W. Wilcox, of this city. Dr. Wilcox, who is

a talented amateur photographer, has just received the degree of LL.D. from the Maryville College, Ky. This is his fourth honor. His first—B.A.—was given by Yale; his second—M.D.—by Harvard, and his third—M.A.—by Hobart College. Dr. Wilcox likewise fills the chair of Clinical Medicine in the N. Y. Post-Graduate Medical College in this city, besides being one of our busiest physicians in practice. Long may he live and enjoy such a life of usefulness.—*Wilson's Photographic Magazine.*

Mr. DAVID B. ALOE, of A. S. Aloe & Co., of St. Louis, gave us a call recently. He was much interested in the novelties in photography and endeavored to see them all, in which we believe he was successful.

Mr. E. O. ZIMMERMAN, of Zimmerman Bros., St. Paul, greeted us the other day in this city. Mr. Zimmerman is on a visit East with his good wife, combining pleasure with a survey of the latest thing in photographic apparatus and supplies.

Mr. ROBERT DEMPSTER, of Robert Dempster & Co., of Des Moines, Iowa, was in New York for a few days recently and gave us a call, looking for the new things worth seeing to take them West with him.

R. B. MULLETT, of Mullett Bros., Kansas City, also called on us to hear about all the novelties, but he was likewise very much interested in blue fishing, that which engaged his greatest attention being the shape of the fish rather than its size.

TABLE OF CONTENTS.

| | PAGE | | PAGE |
|---|------|---|------|
| A NEW METHOD OF PHOTOXYLOGRA- PHY, by Prof. Alex. Lainer..... | 432 | PLATINUM TONING ON MATT-SURFACE PAPER, by T. O. Mawson | 442 |
| ANSWERS TO "A TOUCHING APPEAL" | 445 | STEREOSCOPIC PHOTOGRAPHY, by Ellers- lie Wallace | 425 |
| BROMIDE ENLARGING, by Frederick Park..... | 444 | THE APPLICATION OF ART TO PHO- TOGRAPHY—No. 4, by H. P. Robinson | 429 |
| CLOUDS, TRUE AND FALSE..... | 446 | THE EIKONOGEN DEVELOPER IN THE HANDS OF THE PROFESSIONAL PHO- TOGRAPHER, by R. Hausdorf | 434 |
| EDITORIAL NOTES | 419 | VIEWS CAUGHT WITH THE DROP SHUT- TER..... | 448 |
| HALF-TONE PHOTO-BLOCK PRINTING, by Colonel J. Waterhouse | 438 | WHAT OUR FRIENDS WOULD LIKE TO KNOW..... | 447 |
| LETTER FROM FRANCE, by Léon Vidal | 421 | | |
| MANGANESE SALTS IN PHOTOGRAPHY.. | 417 | | |
| OUR ILLUSTRATION..... | 445 | | |

ANTHONY'S

Photographic Bulletin.

EDITORS :

PROF. CHARLES F. CHANDLER, PH.D., LL.D.

PROF. ARTHUR H. ELLIOTT, PH.D., F.C.S.

VOL. XXIII.

AUGUST 13, 1892.

No. 15.

DALLMEYER'S NEW TELE-PHOTO LENS.

WE have recently come into possession of one of Mr. Dallmeyer's latest achievements in photographic optics, the tele-photo lens, and it certainly is a most remarkable instrument. The particular specimen we have been using is mounted in aluminium which makes it so light that a look of surprise runs over the face of everyone taking it into the hand for the first time, it is so much lighter than a brass-mounted lens.

In regard to the optical parts of the instrument, the front portion is practically a portrait combination of the B class, and gives when used alone an inverted image upon the ground glass of the camera. Behind this combination a tube projects into the camera box about the same distance that the front portion projects beyond the lens board, and this tube carries what is called the negative element of the tele-photo lens. The most surprising thing is the first view of the image upon the ground glass of the camera when using the new combination ; it is not inverted. This comes from the fact that the so-called negative element of the tele-photo lens is so placed that the rays from the front combination are not allowed to cross one another before they fall upon the lens. This negative element is an achromatic concave lens of the same character as the eyepiece of an opera glass. In fact, the new tele-photo lens is, roughly speaking, one side of an opera glass arranged for photographic work.

In order to give our readers some idea of the performance of the lens, we made the following experiments.

With a $6\frac{1}{2} \times 8\frac{1}{2}$ rapid rectilinear lens, a negative was made looking up Broadway; then, without changing the focus of the camera, a No. 1 tele-photo lens was put upon the same box, and the field covered was a circle 4 inches in diameter, but an object that measured three-eighths of an inch with the rapid rectilinear lens gave an image with the tele-photo lens that was $\frac{1}{16}$ ths of an inch. The bellows of the camera, a $6\frac{1}{2} \times 8\frac{1}{2}$ view box, was then extended to its full length, and after

| Distances of Focusing Screen from Compound Negatives or Back Foci. (1) | No. 1. Angle included is practically constant; at Full Aperture= 11° ³ (2) | | | No. 2. Angle included is practically constant; at Full Aperture= 12° ³ (2) | | | No. 3. Angle included is practically constant; at Full Aperture= 9° ³ (2) | | |
|--|--|-----------------------------|--|--|-----------------------------|--|---|-----------------------------|--|
| | Corresponding Foci. | Intensity at Full Aperture. | Circle of Illumination at Full Aperture. | Corresponding Foci. | Intensity at Full Aperture. | Circle of Illumination at Full Aperture. | Corresponding Foci. | Intensity at Full Aperture. | Circle of Illumination at Full Aperture. |
| Ins. | | | | | | | | | |
| 4 | $17\frac{1}{2}$ | $\frac{1}{11}$ | $3\frac{1}{2}$ | 20 | $\frac{1}{10}$ | $4\frac{1}{2}$ | | | |
| 5 | 21 | $\frac{1}{13}$ | $4\frac{1}{2}$ | $22\frac{1}{2}$ | $\frac{1}{11}$ | $4\frac{3}{4}$ | | | |
| 6 | 24 | $\frac{1}{15}$ | $5\frac{1}{4}$ | 25 | $\frac{1}{12.5}$ | $3\frac{1}{4} \times 3\frac{1}{4}$ | 34 | $\frac{1}{12.5}$ | $5\frac{1}{2}$ |
| 8 | 30 | $\frac{1}{19}$ | $3\frac{1}{4} \times 3\frac{1}{4}$ | $31\frac{1}{2}$ | $\frac{1}{16}$ | $5\frac{3}{4} \times 3\frac{1}{4}$ | $42\frac{1}{2}$ | $\frac{1}{16}$ | $4\frac{1}{4} \times 3\frac{1}{4}$ |
| 10 | 36 | $\frac{1}{22}$ | $6\frac{3}{4}$ | 37 | $\frac{1}{18.5}$ | $7\frac{1}{2} \times 4$ | $47\frac{1}{2}$ | $\frac{1}{17}$ | 5×4 |
| 12 | 42 | $\frac{1}{26}$ | 5×4 | 45 | $\frac{1}{22.5}$ | $9\frac{1}{4}$ | $56\frac{1}{2}$ | $\frac{1}{20}$ | $8\frac{1}{2}$ |
| 14 | 48 | $\frac{1}{30}$ | $8\frac{1}{4} \times 4\frac{3}{4}$ | 50 | $\frac{1}{25}$ | $6\frac{1}{2} \times 4\frac{3}{4}$ | 63 | $\frac{1}{23}$ | $6\frac{1}{2} \times 4\frac{3}{4}$ |
| 16 | 54 | $\frac{1}{33}$ | 10 | 57 | $\frac{1}{28\frac{1}{2}}$ | 11 | 71 | $\frac{1}{26}$ | 10 |
| 18 | 60 | $\frac{1}{37.5}$ | $11\frac{3}{4}$ | $62\frac{1}{2}$ | $\frac{1}{32}$ | $8\frac{1}{2} \times 6\frac{1}{2}$ | 78 | $\frac{1}{28}$ | $11\frac{3}{4}$ |
| 20 | | | $8\frac{1}{4} \times 6\frac{1}{2}$ | 69 | $\frac{1}{35}$ | $12\frac{3}{4}$ | 85 | $\frac{1}{30}$ | $8\frac{1}{2} \times 6\frac{1}{2}$ |
| 22 | | | $13\frac{1}{2}$ | 76 | $\frac{1}{38}$ | $14\frac{1}{2}$ | 92 | $\frac{1}{33}$ | $13\frac{1}{2}$ |
| 24 | | | 10×8 | 84 | $\frac{1}{42}$ | 10×8 | 100 | $\frac{1}{36}$ | 10×8 |
| 26 | | | 15 | | | $16\frac{1}{4}$ | 106 | $\frac{1}{38}$ | 15 |
| 28 | | | | | | 12×10 | 114 | $\frac{1}{40}$ | $16\frac{1}{2}$ |
| 30 | | | | | | 18 | 124 | $\frac{1}{45}$ | 12×10 |
| 40 | | | | | | 13×11 | 157 $\frac{1}{2}$ | $\frac{1}{60}$ | 18 |
| | | | | | | $19\frac{3}{4}$ | | | 13×11 |
| | | | | | | 15×12 | | | 20 |
| | | | | | | $21\frac{1}{4}$ | | | 15×12 |
| | | | | | | | | | $22\frac{1}{4}$ |
| | | | | | | | | | $24\frac{3}{4}$ |
| | | | | | | | | | 18×16 |
| | | | | | | | | | 27 |
| | | | | | | | | | 42 |
| | | | | | | | | | 30×24 |

(1) To obtain the distances from the *flange* to the focusing screen, add $3\frac{1}{4}$, 4, and 6 inches for Nos. 1, 2, and 3 respectively.

(2) The angle included is a constant for *one* aperture for any distance of focusing screen, but it diminishes as smaller diaphragms are employed.

The diaphragms are so arranged that for any initial extension (and corresponding intensity) each succeeding smaller diaphragm requires double the exposure of the next larger.

There are seven diaphragms, ranging from full aperture to the *smallest*, which requires sixty-four times the exposure required for full aperture.

The smallest stop reduces the angles included at full aperture in Nos. 1, 2, and 3 to $8\frac{1}{2}$, 9, and $6\frac{1}{2}$ degrees respectively.

No. 1 tele-photographic lens consists of the patent stereographic (1.6 inches diameter) in conjunction with a compound negative six-tenths of an inch diameter.

No. 2 tele-photographic lens consists of the 113. patent portrait (2 inches diameter) in conjunction with a compound negative eight-tenths of an inch diameter.

No. 3 tele-photographic lens consists of the 213. patent portrait ($2\frac{3}{4}$ inches diameter) in conjunction with a compound negative 1 inch diameter.

adjusting the focus of the front combination of the tele-photo lens, a picture was made showing clearly a large sign and clock, which in the rapid rectilinear negative was hardly visible to the unaided eye.

The next test was with an 8 x 10 rapid rectilinear lens. With this lens the object measured $\frac{7}{16}$ of an inch. A No. 2 tele-photo lens was now used at the same focus as the 8 x 10 lens, and the image measured $1\frac{1}{4}$ inches with the first, and 3 inches with the tele-photo lens, having the bellows extended.

The third test was made with a 12 x 15 rapid rectilinear compared with a No. 3 tele-photo lens. In this case using the rapid rectilinear, an image of a window was obtained which measured five-eighths of an inch high. Using the No. 3 tele-photo lens at the same focus as the rapid rectilinear (17 inches) the image of the window was $1\frac{3}{4}$ inches high. The bellows of the camera were now extended, and after adjusting the front combination of the lens, the same window produced an image that was 3 inches high, perfectly sharp and clear.

In order to give one of these lenses a still further trial, we took it up the Hudson River, and from a high bluff, near Peekskill, we made a picture of Roa Hook, the landing place for the State Camp.

The position that we took on the bluff is considered to be about $1\frac{1}{2}$ miles from the Hook. With a rapid rectilinear lens, the image produced of the Hook is a very small fraction of an inch (about three-eighths). With the No. 2 tele-photo lens, and bellows of camera extended, the image produced was about $2\frac{1}{2}$ inches long. In this case the back combination of the tele-photo lens (No. 2) was 12 inches from the ground glass. At long range, great care has to be taken in the focusing of the front combination of the new lens, in order to produce sharp images.

The results obtained are certainly very remarkable, and for long-distance photography, photographic surveying and work of this character, the new lens will prove a great boon.

At the office of the BULLETIN there can be seen a beautiful photograph of Mt. Blanc, made by Boissonnas, of Geneva, made with the new lens, and on the same card will be found a picture made with an ordinary lens. The contrast is wonderful.

We give on opposite page a table recently devised by Mr. Dallmeyer, showing the functions of the various sizes of the new lens. We trust it will prove interesting to our readers.

EDITORIAL NOTES.

THE American League of Amateur Photographers is now fully organized, and will take the place of the American Photographic Conference. Its president is Paul L. V. Thiery, of the Newark Camera Club; Treasurer, W. H. Drew, of the Lynn Camera Club, and the Secretary, T. J. Burton, of the Society of Amateur Photographers of New York. It is established to bring about a closer union between societies and to advance all the interests of the art. State divisions will be organized and a national council will be held in May, 1893. The membership dues are one dollar yearly. The New York division has also organized under the presidency of Frank La Manna, of the Brooklyn Academy of Photography, with H. S. Fowler of the same society as secretary and treasurer.

For obtaining on Aristo paper a beautiful matt surface, even finer than that resulting from the use of ground glass, A. Thompson recommends, in a Ger-

man paper, the use of a sheet of common slate, which he previously cleanses with a sponge and warm water. The prints should be treated to an alum bath before squeegeeing thereon, unless they have been toned and fixed in a bath containing alum. They should be laid down and squeegeed without draining, direct from the last washing bath.

OUR thanks are due for an invitation to the twenty-sixth illustrated lecture before the California Camera Club on the 22d ultimo, entitled "An Hour or So in Mexico." We realize that we miss many pleasant evenings on account of the distance between us.

THE Lowell Camera Club has completed its fine and convenient suite of rooms, and they are ready for occupancy. Everything is fitted with a view to practical usefulness, and the outlook for a successful winter's work is excellent.

WE welcome, with pleasure, Vol. I, No. 1, of the *Australian Photographic Journal*, published at Sydney, which enters the field with the avowed purpose of furnishing a complete record of all new inventions and ideas, and discussing the same for the assistance of the professional and amateur. The field of usefulness is large, and will doubtless be filled to advantage. It produces an illustration by the colotype process, which would be worthy a much older and more substantially established journal. May success attend it.

A LARGE increase in the supply of platinum is looked for in the immediate future from British Columbia, which has in the past not been a source of supply. More than 2,000 ounces are said to have been bought by one firm alone. The introduction of hydraulic power is said to be the prime cause of the increased output, which will reduce the price.

A NOVEL use is made of photography in several European cities where, when waifs and vagrant children are cared for in the city institutions, they are photographed on admission, just as they appeared on being received, and the photograph is presented to them after the lapse of their term of service with an injunction to keep it always as a reminder of the good received at the hands of the institution and the debt of gratitude that is due it.

WE note by the classification and rules of the World's Columbian Exposition, that photographic apparatus and accessories and photographs are to be included in the department of Liberal Arts. Department L, Group 151, Class 871—space in which to exhibit—will be free under certain restrictions, and full information may be obtained by any intending exhibitor by making application to the Director-General, World's Columbian Exposition, Chicago, Ill.

WE would acknowledge the receipt from the United States Naval Observatory at Washington, of Part II, of Observations of Double Stars made at the Observatory from 1880 to 1891, by Prof. Asaph Hall, of the United States Naval Service.

MR. JAMES H. CROCKWELL, of Salt Lake City, has been appointed by the World's Fair Commission official photographer for Utah, and will make an exhaustive collection of views showing all phases of the mining interests of that territory. Mr. Crockwell's large experience and acquaintance in this field of work will be of inestimable value to the country at large in this connection.

WE note that Miss Catherine Weed Barnes was present at the late convention in Edinburgh, and responded to the toast, "The Ladies," and read an original poem at the dinner and smoking concert given in connection therewith, the first one, by the way, to which ladies have ever been admitted. The occasion was one of great pleasure to all. Before the close of the convention on the last day of its session, Mr. George Mason, of Glasgow, was unanimously elected President of the next convention at Plymouth.

THE New Britain (Conn.) Camera Club will shortly join the New England Lantern Slide Exchange, and a committee is now busy making the necessary arrangements. There are already fourteen clubs in the Exchange, each of which is obliged to contribute fifty slides on admission as a member.

THE Minneapolis Camera Club has lately been reorganized, and is in a very prosperous condition, occupying an elegant suite of rooms with one of the best skylights in the city, with dark rooms and working facilities of the most complete nature. They extend the courtesies of the same to members of other clubs visiting the city. Their officers for the present year are: President, W. M. Tenney; Vice-President, W. Channing Whitney; Secretary, A. L. Eidmiller; Treasurer, W. C. Porter.

A VERY successful and quite unusual photograph of lightning was obtained by Mr. John W. Rusk, of Haines Falls, N. Y., on the evening of July 22d, during a very severe electric storm in that place. Three distinct flashes are visible, two of which are extremely distant and the third much nearer the foreground; in fact, the latter, which takes the form of a long streak almost parallel with the horizon, but broken into numerous curves and angles, is apparently between the instrument and the mountains, and covers a distance of more than two miles on the landscape. Mr. Rusk is to be congratulated on his success.

A LETTER from Mr. H. Snowden Ward, of *The Practical Photographer*, of London, announces that an effort is on foot in England to arrange for as large a party as possible of amateur photographers who may visit the World's Fair to make their visits come together in such a way that they may be officially recognized while in this country. We shall be very glad if such a project can be carried out, and can confidently bespeak for them a cordial welcome from their brother societies in this country.

THE New Orleans Camera Club are considering the acquisition of new quarters for a permanent residence, and a committee has the matter under advisement, with instructions to make a final report in August.

A VERY interesting exhibit was given last month by the Pawtucket (R. I.) Camera Club, including prints on aristotype, albumen, plain salted and bromide papers, besides prints by the kalotype process, and on blue paper. The quality and variety of work and subject was noticeable, and the interest manifested has aroused a good deal of enthusiasm.

LETTER FROM GERMANY.

BY DR. H. W. VOGEL.

Photography of the Heavens.—Carbon Process for Amateurs.—Grain in Gelatine Negatives.—Metol and Amidol, new Developers.—Letellier Uranium.—Copper Process.

My esteemed confrère and contributor to your journal, Mr. L. Vidal, of Paris, makes, on page 296 of the same, some highly interesting remarks about the use of orthochromatic plates for taking a map of the heavens in 20,000 sections. The Astronomical Congress of 1887, and the permanent committee of the same, resolved that the stars should be taken on ordinary plates only. Mr. Vidal is not the only one who was surprised about that resolution. It is a fact, that to this Congress (as already mentioned by Mr. Vidal in 1888) only a limited number of photo-chemists were invited, under the impression that the photographic knowledge of the invited photographing astronomers was more than sufficient. True enough, some foreign astronomers, like Hasselberg, Lohse, etc., with an excellent photographic knowledge, were present, who long before had called attention to the importance of color-sensitive plates for celestial and star views. But the French gentlemen knew nothing about this, and even celebrated photographic astronomers in Paris like Jansen and Henry Bros. expressed their surprise in Congress when Dr. Eder showed them his spectra, taken with color-sensitive plates. But even the proof of this fact was of no avail. The experiment of E. Vogel, who took the "Orion" with solid stereo-apparatus (with two objectives) and obtained with eosine silver plates 110, but with ordinary plates simultaneously exposed for an equal length of time in the same apparatus only fifty-three orbits, was ignored and the ordinary gelatine plate was adopted.

Foreign members of the Congress, during their sojourn in Berlin, expressed openly their dissatisfaction about these resolutions. "The work will be antiquated at the time of its commencement," was our expression at that time. Thus another unpardonable mistake slipped through.

It was asserted that the rays in the neighborhood of *G* (Fraunhofer) acted strongest upon the plates in question. But this is only the case with collodion plates, and not for the gelatine plates recommended by the Congress, which are most sensitive to rays of the wave-length four hundred and fifty instead of between *G* and *F*. Eleven instruments have been ordered which are for the rays in the neighborhood of *G*, and therefore incorrectly achromatized. Each instrument, according to French prescriptions of 0.33 m. opening, and 3.43 m. focus exactly, price 50,000 to 60,000 francs.

Professor Dunér, Upsala, tried to defend the Congress, and the commission selected by him in No. 10 of the *Moniteur*, against the attack of Vidal. He asserted that the color-sensitive plates were more applicable for lenses achroma-

tized for the violet rays, as the focus for rays principally effective upon color-sensitive plates would be outside of the plate. The simple answer would be : Why is the achromatizing done incorrectly? But we have obtained with old lenses of one-tenth opening (therefore corresponding with the astronomic tubes) on color-sensitive plates, quite excellently sharp pictures. Spitaler has even obtained some with non-achromatized lenses. The objections of Professor Dunér appear, therefore, not well founded, particularly as our photograph with Steinheil lenses, opening one-seventh, and achromatization *D* and *G*, Fraunhofer, furnishes solar spectra, which appear from *C* to *N* in all colors, so sharp that they will endure a tenfold enlargement. The objection that color-sensitive plates have not been sufficiently tested, can hardly be confronted with the above-mentioned more recent experiences.

What will the gentlemen say now to the communications of the astronomer, Max Wolf, which I published in my last letter, and according to which the sensitiveness of ordinary plates is subject to not inconsiderable changes?

Wolf writes at the same time : "The orthochromatic plates seem to be less subject to this change of sensitiveness."

It is to be regretted that such an expensive undertaking has not passed first through a sufficient examination, and I am afraid that millions will be thrown away just as with the Venus expedition.

For some time an increasing interest for pigment printing has been shown in amateur circles. We have always had our doubts about the same, because the process has been subject to our attention for the last twenty-eight years. We have watched its development during this period from an incomplete beginning to its practical application by Swan in Newcastle, and Braun and Dornach. We hoped in 1867 that it would come into general use, but this hope was not realized. The process appeared to be too uncertain with the transfer papers and rubber in use at that time. The number of defects was too great.

Some years passed before Johnson appeared in public with the gelatine transfer paper. The process then became of general interest. Monckhoven succeeded in raising the sympathy of the Belgian public for it. Photographers were thus required to take notice of the process, and photographs *au carbon* were the order of the day in Belgium from 1876 to 1878. In England they established the Autotype Company under the management of Sawyer, which furnished the necessary materials (carbon and transfer papers), and it exists to the present day. But it did not appear to us as if the process was going to flourish in England. Still, public attention was so excited through the daily English journals, that a number of wealthy photographers invited Mr. Sawyer to visit Berlin to show the process.

The satisfaction was general. The transparent window pictures upon glass, which could not be made by the silver process, were particularly liked, as also the selection of the color tone. Their durability was praised as a principal factor ; not so much the saving of silver.

It proved at once that the latter is sufficiently balanced by the circumstance that the picture must be transferred at least once, and generally twice. The consumption of paper is thereby tripled. Peculiar experiences were obtained as regarded their durability. Chemically—with genuine color and good washing—the same was, of course, guaranteed, but mechanically the pictures were, particularly in a moist condition, surprisingly easy to damage; and even the dry,

handsome transparencies, used as window decorations, would not stand the change of temperature, and peeled off. Goupil, the Paris dealer in artists' materials, was obliged to withdraw a publication of 80,000 of such pictures from the market; and even the paper pictures, by frequent and sometimes careless handling, are very easily injured, causing a good deal of uneasiness to the dealer. There were, therefore, sufficient reasons to gradually weaken the disposition of the photographer and the taste of the general public for pigment prints. Only in some special processes it kept its reputation; for instance, the production of diapositives for enlargements, which, with respect to the fineness of the grain, leave, indeed, all other diapositives behind; the double transfer became superfluous by the introduction of films, which can be copied from both sides. Important applications were also invented, like the beautiful imitation Limoges enamels, by Schirm, which can be produced by every amateur. The amateur is also not required to expose his pictures to the public and have them handled by everybody. There is, therefore, very little danger regarding mechanical injury. The peeling of the film can also be avoided by a more solid support than collodion (chrome gelatine). We have seen beautiful diapositives serving as lamp-shades which have been in use for over a year, and diapositives as lantern-slides which remained unchanged for more than ten years. They have, of course, not been exposed to moisture.

The expense is not always a main consideration, and a revival of this interesting process is therefore desirable.

Regarding the grain of gelatine dry plates, the celebrated astronomer, Dr. Hasselberg, in Upsala, Sweden, expresses himself relative to his recent investigations about the spectrum of argillaceous earth (clay).

Dr. Hasselberg has enriched science with an excellent detail photograph of the spectrum of clay, which has been published in the transactions of the Swedish Academy (Stockholm, Norsted and Soner), and reaches from wave-length 484,425 to 504,085. Hasselberg made his experiments on English color-sensitive plates. He says: It is generally accepted that the grain of the plates depends solely upon the condition of the emulsion, and is independent of the developer. This has not been confirmed in every case. Of two negatives cut from the same plate, and developed with hydroquinone and oxalate of iron, the latter showed a far finer grain than the former. The difference is quite striking under the microscope, and comes out still more, when the fine details of the spectrum are examined in one or the other case. Under such circumstances it is necessary to make an exact examination about the size of the grain with the different developers. We believe that the slowness of the developer is owing to the size of the grain. The new metol developer—the most rapid developer known to us—might prove to give the smallest grain in this case.

The theory of organic developers having been determined by Dr. Andresen, it is not to be wondered at that new developers appear daily among the newly discovered organic bodies. Metol and amidol are thus the heroes of the day. Both originate from the chemical factory of Hauff at Feuerbach, Wurtemberg, Germany. I cannot assert that I have tested both compounds thoroughly, but all my experiments so far have given excellent results, particularly for instantaneous views. Both work very quickly, that is, the development proceeds rapidly, and the metol gives details, which I have obtained with no other developer. Amidol has the remarkable property that it requires no alkali and de-

velopes even slower in the presence of sulphite. These new developers deserve, at all events, the greatest consideration and attention by the portrait photographer.

We applied metol even without the use of bromide of potassium, although we would advise its applications. There are several formulas, of which I will give Dr. Eder's, the one I worked:

SOLUTION A.

| | |
|-----------------------------|------------|
| Sulphite soda (cryst.)..... | 100 parts. |
| Metol | 10 " |
| Distilled water..... | 1,000 " |

SOLUTION B.

| | |
|----------------------|------------|
| Carbonate soda..... | 100 parts. |
| Distilled water..... | 1,000 " |

Take equal parts of A and B before development. If softness is desired, add from one-sixth to one-half of carbonate solution. Metol is the sulphate or hydrochloride of monomethylparaamidocresol. Amidol is a salt of diamidophenol. In new printing processes, I call the attention to the revival of uranium.

M. Letellier, in the *Revue Photographique* gives the following formulas for prints of red color:

| | |
|------------------------|-----------|
| Nitrate uranium..... | 72 grams. |
| Nitrate of copper..... | 20 " |

are dissolved in a small quantity of water; the solution is neutralized with carbonate of soda, and diluted to one liter. Paper previously prepared with gelatine or arrow-root, is left floating upon this solution for one or two minutes, and is then dried in the dark. The printing proceeds until the picture becomes faintly visible, and it is then developed to its full strength in an eight-per-cent. solution of red prussiate of potash; it is then washed in ordinary water without any further fixing. To obtain a sepia tone, the uranium-copper solution is neutralized with ammonia instead of carbonate soda, and the picture is developed with a two to three per cent. solution of red prussiate of potassium.

THE APPLICATION OF ART TO PHOTOGRAPHY—No. 5.

BY H. P. ROBINSON.

THE most straightforward way of setting about picture making is to arrange in your mind what you want to do, and then suit your tools to the work, always governed, of course, by possibilities. This is a rule not always followed, and there is a curious tendency in some photographers to reverse the order, and to suit their pictures to the latest fashion in tools. Many years ago lenses were not made that included a wider angle than about 40 degrees—a very suitable angle for pictorial effect. Then wide-angle lenses were introduced, and there was a great run upon pictures including a wide angle. Time and reflection have shown that the use of a wide angle is only a necessary evil for some subjects, and should be avoided when possible. We are now about to go on the other tack. A lens to take large images of distant objects has been invented, and we shall have it demonstrated that the foreground is a mistake altogether, a most unnecessary adjunct to a picture, and quite scientifically wrong.

Now, those who have had most to do with pictorial photography are unanimous in considering that, as a rule, the foreground is the most important part

of a picture—even more so in photography than in a painting—for, being the nearest part, the photographer has the most control over it.

In studying any art it is well to see what has already been done, and, in considering the treatment of the foreground, the student could not do better than to look to the effect of this part alone. In examining a collection of photographic landscapes that have any pretension to pictorial qualities, it will be found that the composition and even the *chiaroscuro* is almost invariably largely controlled by the arrangement of the foreground.

Size, also, may be suggested by well-managed foregrounds, and sometimes in the most unexpected ways, as I hope to be able to show. It is a well-known fact that photographs seldom give any satisfactory idea of the size or height of mountains, and it is supposed that lenses including only a very narrow angle would be the remedy. Vast numbers of photographs of Swiss mountains, for instance, are published, and the effect they suggest is that they have been done from toy models quite near to the camera, and a foreground is usually absent, the photographer having apparently thought that if he filled his space with the mountain it would look big, but the reverse of this happens, and the ingenious model rather than the mountain is suggested. As a contrast there is a painting in the present exhibition of our Royal Academy in which these conditions are reversed, and the mountains look their proper size, although they occupy a comparatively small space in the picture. It is a picture called "June in the Tyrol," by J. McWhirter. The foreground consists of a flower-enameled meadow, which fills three-fifths of the space. The blossoms are so large and conspicuous that the marguerite daisies in the immediate foreground are nearly life-size. On a winding path is a judiciously placed figure, in which is combined the highest notes of black and white, subtly designed to give a better scale to the values. The upper two-fifths of the space is devoted to the mountains and sky. Now, here we have a picture which is formed of more than half foreground, part of it very near, and yet the mountains occupying the smaller space look every inch of their height. Nor is this due to color alone, for the effect is preserved in the small process blocks done from the painting for the numerous illustrated catalogues. This is quite contrary to the usual teachings of scientific photographers who are not content with the ordinary lens, but must have one invented to bring the mountains nearer to them; and the good effect is due to the proper relation of things, which allows the mountains to keep their place properly set off and set up by a well-selected foreground, and, above all, by the proper placing of a figure as a keynote to the tones.

It has been said that a good foreground will excuse a faulty distance. I do not go so far as to agree with this, but it is certainly true that a good middle distance and distance will seldom make a picture in the absence of a well-composed foreground. No strength or importance in other parts will save the picture in a pictorial sense.

Good foregrounds are not always to be found ready made, but much may be done with apparently very indifferent materials. A flat meadow or smooth plain may be broken up by the introduction of cattle, figures, or any available object. I have even seen an unpromising foreground made useful by the photographer throwing his coat and camp stool on the grass in the right place. A spot of white or black, or, better still, an object which combines the highest

light and the darkest dark, is of the utmost value in the foreground. A spot of this kind gives the eye something by which to estimate the intermediate tones between the two extremes, and is a device often used by artists.

It would not be possible to give any exact instructions as to the arrangement of foregrounds; that must be the outcome of the operator's knowledge of art, and his opportunities; but it may be stated, as a general rule, that the more simply and broadly they are treated, the better will be the result, not forgetting, however, that the object is emphasis.

The human figure ought, in many cases, to be the most appropriate ornament of the foreground, but the way they are often, or nearly always, employed, is enough to make a teacher of art tear his hair and sit in sackcloth and ashes. For many years the present writer and others have been trying to teach the simple commonplaces of composition, and yet the world is deluged with really dreadful examples of good scenes spoilt by figures, the selection and arrangement of which show something worse than want of taste. I have one before me at the present moment. An admirable photogravure of a photograph of a pretty scene with great opportunity for figures. The way the photographer has used his opportunity is this. There is a perhaps not very picturesque bridge, end on to the spectator, in the center of the picture; on this he—"aiming," as he explains in a letter, "for portraits as well as landscape"—has placed a friend and his son. The friend, redolent of Broadway (it is an American photograph), putting on his best expression and staring at the camera; the son, being younger, looking more natural, but also "sitting to be took" in every limb, and, of course, staring at the operator. The one head is exactly in a vertical line with the other. There may be some little excuse for the photograph, in that it possibly pleases the photographer and his friend, who knew no better, but it does positive mischief to publish this sort of thing as a picture. It is terribly misleading to the student, who is apt to comfort himself by the reflection that he could easily "do as well as that," and that it must be good or it would not be published. A really good picture might have been made of the subject if some appropriate figures, or a wagon and horses, had been introduced, coming or going over the bridge. If these had been well done, and a few clouds added to cover the blankness of the white-paper sky, that curse of the picturesque, the telegraph pole, which seems to be all too prevalent in American pictures, and is ruining the beauty of England, might be excused.

Yet, the proper use of the figure in landscape is not altogether hopeless. In every succeeding exhibition there is increasing evidence that photographers are becoming more careful, are more alive to the necessity of consistency, and take the trouble to think before they expose their plates.

From the foreground to the distance in a picture is but a step, but it should look afar off. It too often happens that there is no expression of air and space in a photograph. This is sometimes the fault of selection, but oftener of under-exposure. There is such an insane desire for quickness now, that views which would allow of a prolonged exposure are taken with a drop-shutter. Then, again, many photographers who care more for science than art insist on getting all objects as sharp as a small stop will make them. This is a mistake, but not one of recent discovery, as some suppose. Nor is it a new thing to carry diffusion to excess. Opposed as I have always been to any great departure from what may be called the "fitness" of photography, or imitating the results of one

art by the materials of another, I have always advocated a certain amount of softness to be produced by a very moderate diffusion of focus. In the *Year Book* for 1879 I wrote as follows: "Photographers do not seem to be able to quite forget the teachings of the opticians in the early days of the art, when photography was regarded chiefly as a science, that all photographs should be full of detail, and all details should be rendered sharp enough to show the astonishing definition of which their lenses were capable." I do not mean to recommend anything like out-of-focus photographs—that heresy has had its day at least twice in the history of the art and failed—but I do suggest to photographers to search for atmosphere and represent it by any legitimate means their art will allow.

Definition is the distinctive feature of the art. No means of art can approach it in this respect, and it should not be lightly put aside; but it should be used, not abused. A brilliant bit of definition in the foreground is often of immense value in contrasting and sending back other planes, but it is not necessary or advisable that excessive definition should be carried through the picture or that the clearest possible day should be selected so that every detail should "come out well." I should like to see, for instance, in photographs more of the misty freshness of a cool spring morning, an effect technically easy, but not so apparent to the ordinary photographer as a brilliantly lighted "object of photographic interest." A brilliantly clear day is still considered the most desirable, and is, indeed, most useful when mere maps and plans of localities are required; but if the photographer wishes to produce works of art he should try to get into them some of the "mellow and transparent modulation of mysterious atmosphere" which the superfine writers on art talk about so poetically.

Not that I have a word to say against the "merry sunshine," for, indeed, I have taken most of my landscapes in its genial glow, but I have always been careful that it did its spiriting gently, with due regard to the subordination of trivial details and the prominence of those parts which were of most importance.

[From *Photographische Correspondenz*.]

DISTANCE-PHOTOGRAPHY.

BY RUDOLF SPITALER, *of the Imperial Observatory, Vienna.*

THE general interest manifested lately in distance-photography induces me to explain somewhat its principles, as I have been occupied with a special kind of the same—astro-photography—since 1885. I shall show you in the course of my explanations, that everything now designated as new, has been in use for a long time, except that it was not applied heretofore to terrestrial photography, but only in astro-photography. Dr. Steinheil is the only one who in February, 1890, had to furnish to the Imperial Marine Bureau (Hydrographic Offices) a photographic telescope for terrestrial purposes, used for seashore views. The construction he selected was copied from the Galilean telescope.

When Prof. Dr. Eder communicated the news at the meeting of the Photographic Society, November 3, 1891, that Dr. Miethe had invented a tele-photographic objective, I showed a few days later to some friends, that, by the combination of an ordinary photographic objective or a single lens with a biconcave lens, a tele-photographic apparatus with short focus could be produced. Herr

Rieck made a sample view with such a combination, which he presented at the meeting of the Club of Amateur Photographers on December 12th of last year.

The principle, after which I have made since 1886 directly enlarged pictures of the moon, I have simply applied to an ordinary photographer's objective. Specimens of these have been at the Exhibition in the Austrian Museum for Art and Industry, as well as at the Berlin Jubilee Exhibition.

This principle is the same as, I heard a few days ago, had been applied by Dr. Steinheil in 1890 for terrestrial distance-photography, and recently introduced again by Dr. Miethe and Mr. Dallmeyer.

The principle is the same as that of the Galilean telescope, and the "Dialyte," invented in 1827 by Littrow and executed by Plossl.

The principles of distance-photography are based upon the theory of the telescope as mentioned by Dr. Steinheil in the article referred to. Every telescope, with or without ocular, can be changed to a photographic apparatus, and every photographic apparatus to a telescope. Only, one construction is better adapted for a telescope and the other for a photographic apparatus.

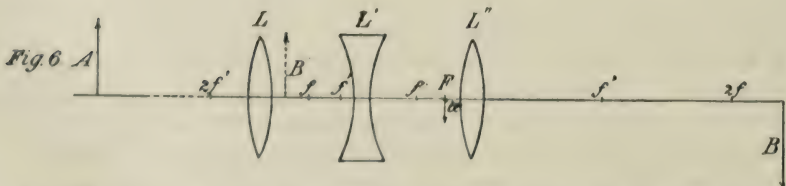
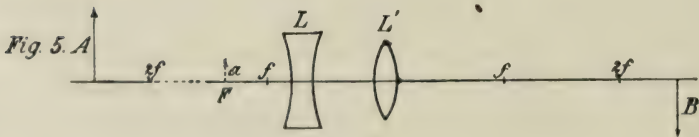
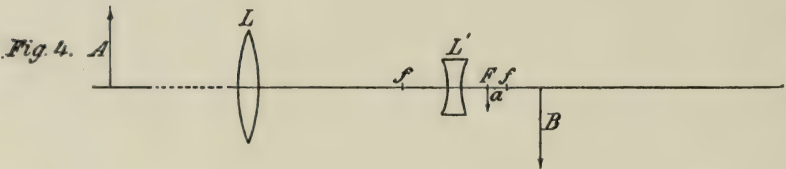
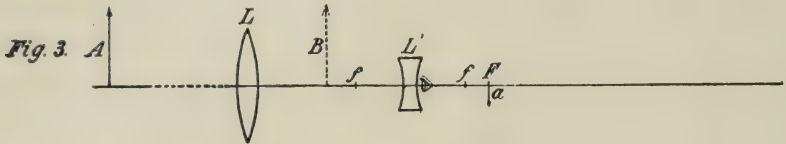
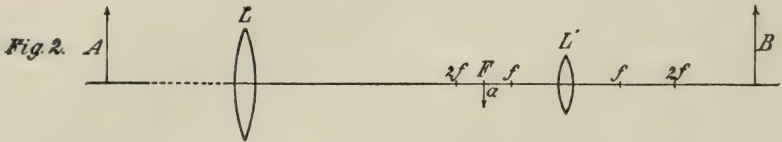
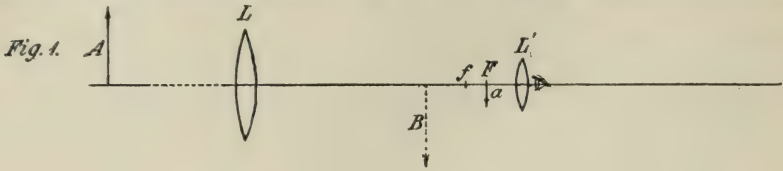
With the telescope, the lens' (objective and ocular), position is so arranged that a virtual picture is obtained, that is, the rays pass from the last glass surface in a divergent way, and the eye sees in the back-prolongation of the rays, when they cross each other, a picture of the object upon which the telescope was directed. Actually, the divergent rays are made convergent again by the eye lens, and produce upon the retina a real picture. With the photographic lens the rays converge and form a real picture, which is caught upon the sensitive plate and is fixed.

I have said expressly, that every telescope can be applied as a photographic apparatus, even if the lenses are not achromatized for the chemical rays; we photograph nowadays, thanks to the great completeness of orthochromatic photography, and as I do with best success, on the great refractor of the Vienna Observatory, which is only achromatic for the optical light rays with a suitable ray filter and with color plates sensitive to the rays allowed to pass through. The object to be photographed must of course be sufficiently bright, so that part of its light can be spared.

With the astronomic or Kepler telescope (Fig. 1) a very much reduced and reversed picture a is produced by the lens L of a very distinct object A at the focal point F . In astro-photography, if, on account of weakness of light, it is not advisable to take the picture in the before-mentioned manner, the same is caught by means of the light-sensitive plate; thus we obtain a focal picture, whose size is directly proportional to the focal length of the objective. If, therefore, terrestrial objects with very weak light were to be taken from a long distance, a telescope with great opening and focal length would have to be applied unless the time of exposure can be considerably extended. If a condensing lens (ocular) L' is so arranged behind the focal picture, that it comes between the same and the focal point f , the rays will diverge from the condensing lens, and an eye which looks through the same perceives an enlarged reversed picture B of the object A . The ocular is moved to and fro until the picture has moved to the distinct visual distance and appears completely distinct.

If the ocular L' (Fig. 2) is pulled out so far that the focal picture a comes between its single (f) and double ($2f$) focal length, the rays will converge and unite on the other side of the focal length of the ocular, to an upright, enlarged

picture B , which can be photographed. This picture is very far removed if F and f fall together and the rays escape parallel; but it constantly comes nearer the more f is distant from F . If F falls together with double the focal



length of the ocular ($2f$), a focal picture will be produced of equal size, but reversed in the distance of the double focal length of the ocular. If a thread cross or thread system has been placed at the focal point of the objective F , the

same will show upon the photographic plate with the object to be photographed. This principle finds application in taking solar views with the photo-heliograph. As can be seen easily, the telescope is thereby considerably prolonged, and in consequence of which not very convenient to manage, so that for terrestrial distance-photography it is not very suitable.

But the Galilean telescope is apparently expressly made for it, while, on account of its small visual field, it is less suitable for observation, and finds application now only in the opera-glass. Its theory is the following: If a diffusion lens L' is so inserted between the focal point picture a and the objective L (Fig. 3) that the focal point picture is placed on the other side of the diffusion point f of the same, the rays falling from the objective upon the diffusion lens (ocular) will *diverge*, and an eye, which looks through the ocular, perceives an enlarged, upright, virtual picture B of the object, which, by removal of the ocular, is brought into the distinct visual length.

If the diffusion lens is removed again from the objective (Fig. 4), the rays will pass parallel; and if f falls together with F , we have no picture at all, or the picture lies, so to speak, in infinite distance. But, on further removal, the focal-point picture comes between the diffusion lens and the diffusion point; the rays will, now, not diverge from the diffusion lens, but will converge and unite to form a reversed, enlarged, real picture. Herewith we have arrived at the tele-photographic objective, if the focal length of the objective L is chosen as short as possible, and the same is united with a diffusion lens under the last-mentioned conditions.

Dr. Steinheil puts in place of the diffusion lens a negative ocular, whereby an upright, enlarged, real picture is obtained. Otherwise, this principle is the same as the last mentioned.

As in the latter two cases, both lenses may be counted together. To make the picture produced by the same aplanatic and achromatic, it is necessary that each lens, by itself, should give a faultless picture. But if any desirable photographic objective is applied as front lens, the back lens (diffusion lens) must also be aplanatic and achromatic by itself. Such a lens is probably known only in astronomical circles as the Barlow lens. With such an one I have made since 1886—after the principle explained in Fig. 4—directly enlarged views of the moon, with a very short camera.

Also, the combination of a single convex lens with a concave lens, jointly removable, which is announced as new in the tele-photographic objective, is very old. What else is Plossl's Dialyte? The idea which governed Littrow in his invention was, of course, something else. I believe that the Dialyte in general has not met with sufficient consideration, particularly in the production of our modern giant telescopes, where the manufacture of a large flint-glass lens is always accomplished with great difficulty. As by moving the diffusion lens the enlargement of the focal point picture can be increased *ad libitum*, the enlargement of the objective to be absorbed, could, by astronomical measurements, always be achieved with the ocular; and it would be only necessary for the ocular, by which the thread net of the micrometer is looked at, and which is put up with the focal point picture in the same plane, to possess only a very small enlargement. The consequence of this would be that the threads of the micrometer would be much finer than by the strong enlarging ocular, whereby measurements could be executed much more exactly. Although the

Dialytes have hitherto been very little in use, they might meet now with a more general introduction, being not only suitable for astro-photographic purposes, but also for the new tele-photographic objective, if the ocular is screwed off.

For distant photogrammetric views, the distant photographic lens combinations might even be of eminent significance. How far they might be suitable for views of life-size portraits at a camera length of shortest dimensions, might be made the subject of investigations, which would be of great interest, particularly as a correct drawing of the lenses may be expected by the same.

After the explanations made in Fig. 4, it will be easy for everybody to change an opera glass into a photographic apparatus.

To complete my explanation, I believe that I should not leave unmentioned that the new objective of Mr. Haschek is practically of no use, by depicting with a diffusion lens (which is to be of only short focal length if the second biconvex lens is not to have too large a focal length), first, a greatly reduced virtual picture of the object, to enlarge the same afterwards by the convex lens, whereby it will become identical with the case explained in Fig. 2, which we had to designate as impracticable for terrestrial distance-photography.

As seen in Fig. 5, the diffusion lens L produces from the distant object A in its front diffusion point F a reduced, upright, virtual picture a . If a condensing lens L , is now placed behind the diffusion lens in such a way that the virtual picture a comes between its single (f) and double ($2f$) focal length, a reversed, enlarged, real picture will be produced on the reverse side of the condensing lens on the other side of the double focal length. If, therefore, the diffusion length of the lens L is large enough, that not too small a picture will result, the focal length of the condensing lens L' has again to be so large, that the picture a comes between its single and double focal length. The real picture will originate then upon the other side of the same, outside of double the focal length, analogous to the case explained in Fig. 2.

By the combination of three lenses the proportions are much more favorable. A condensing lens L (Fig. 6) produces from the distant object A in its focal point F the picture a . If this falls inside of the diffusion point f of the biconcave lens L' , outside of the other diffusion point, an upright, enlarged virtual picture B' will be produced. If this lies again between the single (f') and the double ($2f'$) focal length of the condensing lens L'' , on the other side of this lens, outside of double the focal length, a still more enlarged, reversed, real picture will be produced. I believe this combination can be found in the orthoscope.

"BROMIDE ENLARGING."

BY FREDERICK PARK.*

[Newcastle-on-Tyne and Northern Counties Photographic Association.]

(Continued.)

This apparatus can be bought very cheap already made of any size up to 15 x 12, and is, I think, very convenient.

A rigid box can be used instead, when the lens is inserted at one end and the other end left open, in which case an easel is made to slide in at the back for focusing, and on which the bromide paper is pinned, and a piece of cloth hung over the back of the box to exclude any extraneous light. In each case a piece of ground glass is substi-

* From Author's Proofs.

tuted when focusing, and in the case of the rigid box a mark must be made, so that the easel can be placed in the same position. But a camera with bellows has many advantages, as it is more easily worked for focusing and can readily be made, and a dark slide for holding the paper could be bought and fitted to it. The dark slide can be had fitted with carriers for holding any size of paper, in which the paper will easily stand upright when supported at the corners, like a plate, especially if the thick paper be used; if not, it can be held between two pieces of plain glass without harm.

The best way to fix the negative for illuminating it is to fix it in the camera in which it was taken, either by having a holder to fit in the position of the ground glass, or place it in a dark slide and open both slides; then place the camera with the negative toward the light and the lens-hole pointing inwards, the lens having been removed and inserted in the larger camera.

The lens used in taking the negative answers admirably; but if a short exposure is preferred, then a portrait lens can be used.

It is better to have a long board to hold the two cameras, so that the larger one, containing the bromide paper, is at one end, and the smaller one, containing the negative, upon a small table at the other end, so that the lens-hole of the small camera will be on a level with the lens in the large camera, each of these sliding between beads at either side, so as to keep them parallel. This saves a lot of time in centering, as when once they are set, then at whatever distance they may be removed for focusing they are always centered.

The board with the whole arrangement can then be rested on the window-sill and a good slope should be given, as this is very desirable, and if used with artificial light, is simply placed upon a table.

When a dark room can be used, then the window is first blocked up, leaving an aperture of the size of the negative to be enlarged. The ordinary camera or an enlarging camera containing the negative is fixed up against the aperture, with the lens pointing inward, so that no light can enter the room except that which comes through the negative. Of course, the ground glass is removed and the negative inserted in its place, and an easel for holding the bromide paper placed at the required distance from the lens. The camera must, in this instance, be able to extend to twice the distance of the focus of the lens used.

A window facing the north is to be preferred, or wait until the sun's rays do not fall direct upon the negative, as direct sunshine is not desirable. It is also better to be as high as possible, and to have an open view, so as to avoid houses opposite, as chimneys, etc., obstruct the light and often cast a shadow over the negative, which will show in the enlargement. In this case a mirror or sheet of cardboard at an angle of 45 degrees, outside the window, so as to reflect the skylight on the negative, will greatly help to overcome these difficulties.

When artificial light is used, then a condenser is necessary. It is placed between the light and the negative so as to collect the light, in order to render the rays parallel, which enter it, so as to cause equal illumination of the negative. In this case the same apparatus can be used as described for daylight, so that an open light can be utilized if a large camera is used; but if not, then the light must be enclosed, and the enlargement thrown on an easel, as in the dark-room arrangement. A good Argand burner answers admirably in place of the lime or electric light.

With regard to the exposure, it will depend upon the nature of the light and size of stop used, and will best be found by trying on a small piece of paper first, and when the correct exposure is found for a certain size of enlargement and a certain stop used, then other exposures can be calculated by the ordinary tables of exposure, and the density of the negative taken into account. In the case of daylight, the light varies considerably, but when a correct exposure is found by experiment on a small piece of paper, allowance can be made for the weather the same as in taking negatives, and pretty accurate results obtained.

It is as well to fix upon a good developer for ordinary negatives, and try to expose to suit it, and if a thin or flat negative is used, then a little more bromide added to the developer, so as to give contrast, and the exposure made to suit that developer; while a negative with great contrast should be given an exposure suitable for a developer with less bromide, so as to avoid exaggerating the contrast, so that exposure and development should be suited to each other. The exposure for artificial light will depend a great deal on the source of light used; but for daylight, and what I find is correct for this time of year (April), using stop f -24, at three in the afternoon, and slow paper, from quarter-plate to 10×8 , as I have here to-night, I give three or four minutes; and develop with eikonogen, as follows—

A.

| | |
|---------------------------|------------|
| Eikonogen..... | 1 ounce. |
| Sulphite of soda..... | 4 ounces. |
| Bromide of potassium..... | 10 grains. |
| Distilled water..... | 60 ounces. |

B.

| | |
|------------------------|------------|
| Carbonate of soda..... | 3 ounces. |
| Distilled water..... | 20 ounces. |

Use three parts of A, one part of B, two parts of water, and one drop of ten per cent. solution of bromide of potassium to each ounce of mixed developer.

From four to six prints may be developed in this developer in succession with ease, and the following fixing solution used after:

| | |
|-------------------------|------------|
| Hypo..... | 4 ounces. |
| Bisulphite of soda..... | 1 ounce. |
| Water..... | 20 ounces. |

This fixing solution remains quite colorless if any of the developing solution should be carried into it by the prints, and prevents the possibility of any stains from the developer.

Ferrous oxalate is a very suitable developer, but is more troublesome to make and work with, having to have a clearing solution; and it has the disadvantage of becoming muddy when used with tap water by precipitating the lime, unless distilled water is used, and is, moreover, expensive.

Hydroquinone would be very suitable if it could be used with caustic soda or potash, but when these are used they are very injurious to the paper, as even a weak solution will rot the paper in a short time, so that it will not lift without falling to pieces, and if carbonate is used it is too slow. The above eikonogen developer is also excellent for plates, if used without the extra water, giving clean and brilliant negatives; but if one keeps to one developer, better results are likely to be obtained than when one is tried at one time and another at another; and the best way is, when you find a good developer, stick to it.

[From *The British Journal of Photography*.]

EDINBURGH CONVENTION.

PRESIDENT'S ADDRESS.

I WISH, at the outset of our Edinburgh meeting, to give expression to the lively feelings of interest and sociability with which, I am sure, photographers from all parts have come together to confer and fraternize with their comrades of the northern capital.

A PLEA FOR THE CONVENTION.

Of all the conventions, conferences, congresses, and association meetings which are organized to further the interests of various pursuits, none, I think, can be held to be more appropriate to a summer gathering than a reunion of photographers, whose practice naturally leads them at this season of the year so greatly to outdoor occupa-

tion ; and at no place in the provinces more than Edinburgh, in itself, its surroundings and its photographers, could there be greater certainty of finding stimulus to artistic practice as well as to scientific inquiry in photography. It seems natural and right that photographers should gather in this sociable way each summer, and particularly happy that they should meet in this beautiful city on an occasion when the heads of the organization have signified in some sort their recognition of the artistic applications of photography by seeking as president our veteran in the art, Mr. H. P. Robinson, and, failing him, one younger, though not less enthusiastic in devotion to the same branch of camera craft. I have faith, then, that the cordiality and sociability, characteristic of the camera, will in conjunction with a sympathetic seeking of the beautiful, be specially marked and remembered in connection with this Edinburgh meeting. Notwithstanding the jealousies and quarrels of specialists, which indeed may be regarded as significant of superabundant life and energy, there is certainly a sympathy felt wherever a fellow-worker in photography is met. As the use of the camera becomes more and more universal, such sympathy and unity may become less and less noticeable, but in the early history of any pursuit they are an important factor in progress. It is to be hoped that, despite all passing dissensions and personal differences, photographers will always foster the fraternal spirit prominently witnessed in the very idea and existence of the Convention we are now holding.

On looking around at the general position in which photography is found to-day, I think there is room for satisfaction at the activity and promise displayed. Photography is extending its borders in every direction. In its capacity as handmaid to other sciences and arts, and in its industrial applications, there seems no limit to its utility. Directly, as a profession, or as a pastime, it also grows apace, and I can see little justification for the prophecy we have all heard that the rage for photography would die out as did that for rinking. So far from this being the prospect, photography, with its attendant incitement to the study of light, optics and chemistry, its cultivation of the powers of observation, general and artistic, and as an indispensable means of record for travelers, has become a necessary concomitant of our advancing civilization, and seems likely to extend its influence until the camera will occupy a place in every educated household as naturally as the piano, and even, in some sort, will be made part of the ordinary education of every boy and girl.

PICTURE-MAKING NO WASTE OF TIME.

Having said so much in regard to the general outlook, I propose to direct my remarks chiefly to one particular aspect of our progress in photography, namely, the art aspect. It was, indeed, with some doubt and diffidence concerning my topic that I accepted the honor of the presidency of this year's Convention. In being called on to address the large body of practical and scientific men who impart life and usefulness to this organization, and, through them, to speak to many photographers as well as the general public, I felt I could say nothing in technical criticism of recent purely scientific advances or inventions in photography which would not have been already better summarized and explained. Apart from a general and popular interest in these improvements, such observations as I have been able to give have been, as you know, directed in a different channel, and it is only as these new developments and discoveries have seemed to me to have a bearing upon pictorial work in photography that they have had any great attraction for me, and that I feel able to discuss them. I shall have, therefore, to ask for the patience of those who, by some misfortune in their constitution, hold that mere picture-making is a waste of time, and that it is only in its applications to science and the industries that photography should be seriously regarded. Despite the expression of such views, I deem it unnecessary, at this date, to argue that photography is capable of direct artistic application. Such a position, you will generally agree, it would be absurd to gainsay. The exact extent or limitations of the powers of photography in this direction is a very different matter. New means

and new methods are being constantly introduced, and it will be best to leave it to time and steady effort to prove its capacity and its limits. I welcome, however, this public opportunity of renewing, to the fullest reasonable extent, the art claims of photography, and of inciting all photographers with artistic tendencies and ambition to inquire into and apply to their purpose every new means, method, instruments or practice, which science can devise, or which their insight and needs call for and suggest.

"SUPPRESSION OF DEFINITION."

I think the state of photographic art at the present time is not without encouragement. It has passed through several phases. It started under the friendly auspices of recognized artists, many of whom seemed to expect that it would do, automatically, more than, even with training, it can be made to do; and later, when their disappointment came, it has suffered from an equally unreasonable excess of opposition from some of a certain class of painters, who, while using it, find it possible, at the same time, to roundly abuse it. Early in its history it discovered one or two who understood and mastered some of its powers, and that work remains a marvel of excellence and strength or a triumph of skill in the handicraft.

To-day interest in its development has been freshly roused by keen discussions as to the distinctive qualities of photography, as to the naturalness of certain methods of focusing, as to tone relations, and as to the qualities yielded by the several printing processes in respect of gradation, surface, quality and color. I am of opinion that there has been a great advance made, and that the improvement is still going on. It has been stated that the imparting of superior artistic qualities by the suppression of definition was an old idea, and had been ably and exhaustively discussed in London societies thirty years ago, and that the present movement would probably die out as that died out. I do not think this is a safe forecast. I have not thought it worth while to inquire how ably and exhaustively the matter was thrashed out, but I cannot but think it must have been a one-sided view, as far as the photographers in those societies were concerned, for none of them seem to have had the courage of their opinion to practically and adequately illustrate the broader treatment. It is a very curious circumstance that almost the only valuable artistic survivals from that period are in that particular broad focusing. I refer to Mrs. Cameron's powerful and original pictures, which, to-day, are universally admired. However, the present movement is not confined to matters of focusing, nor is it due to any individual or clique of individuals. The general result of it is happy, in that many photographers have been set thinking and working, and more general and special recognition of the artistic powers of photography has resulted. Only a few days ago a well-known and very popular painter, referring to certain pictures of the class indicated, said to me that he wished he had one or two representative photographs of the kind for his painter friends to see. They were quite unacquainted, he said, with what was being done, and could be done, in this direction, by photography. Painters could not be induced to visit photographic exhibitions, and were prejudiced by the great mass of ordinary photographs which are displayed in the shops. In the same way Mr. Seymour Haden recognized in these photographs the power to seize on beautiful impressions of a subject, and secure what he termed painter-like qualities.

"DIFFUSED TREATMENT."

Do not let it be thought that I wish to arouse afresh any bitter controversy as to the relative merits of different kinds of focusing. Impressions differ, and truth and naturalness in these matters are as various and defensible as the likes and dislikes of different people. We shall do well to keep each of us to the truth that seems the best truth to us, after fully and fairly trying all; or, better still, to cultivate that frame of mind which leaves us free to apply any and every principle or plan as it seems best to suit the purpose in hand. I frequently see photographs which would be considered

quite sharp, possessing most charming qualities, though generally in the direction of the beauties of the miniature or the somewhat rigid steel engraving. My own preference is greatly in the other direction. Photographs in various degrees and qualities of diffused and differentiated focus may still be deficient in some essential qualities, but the general tendency of this treatment seems to me to leave open greater possibilities of securing the broad character of subject, what has been referred to as painter-like qualities. I do not think it necessary to discuss in detail how far, or if, at all, the beauty lies in the use of a rough paper medium or in diffused treatment; I simply indicate that their tendency appears to me to be towards affording greater scope for, and likelihood of, securing the general sentiment, as opposed to a more detailed and decorative interest in the resulting work. It may be that this is merely a fashion, a conventionality in art; but, if so, the conventionality is there, good or bad, and it is certain that results by these methods best please those who have had artistic training. It is merely an accident—or a natural consequence, if you will—that these pictures are open to be mistaken, and are mistaken, for sepia drawings. In the same way, sharp and glossy photographs may be called imitations of the still older miniature paintings. No one method has a monopoly of all qualities. The artist in miniature may have as much perception as the impressionist of broader treatment, although it be a different perception. It will be best, perhaps, to consult and abide by our individual preferences in this matter, as also in that of the much-discussed question of composition, where there may be a preference for the fascinating excellence and subtle combination and direction of line and arrangement of light and dark in spaces, or, on the other hand, for the charm of naturalness of effect and the spirit and character of natural scenes or incidents. The attitudes in the cultivation of these two excellences are somewhat opposed to each other, and the man who marries the two in his expression by painting, and without seeming effort, is the genius we may all conspire to worship.

RELATION OF SCIENCE TO ART.

Here I am reminded of the very interesting discussion as to the separation or relation of science and art, which has recently gained some prominence in our societies and journals, and which seems particularly prompted in connection with photography. The photographer, especially in a new and growing art, and one in which the tools are less simple and direct than in other more definitely handicraft arts, cannot afford to disregard any new weapon which seems to promise aid to his purpose, whether given by science or prompted by the practical necessities of other workers. At the same time, any interest in science or mechanical work, apart from its application to the one pictorial end purely, cannot fail to vitiate the character of the result from an artistic standpoint. The argument is the same as in the painter's art. There is a large tract in the domain of the artist altogether uninvaded by science, as the term is reasonably understood. A great painter may be practically scienceless; his knowledge of appearances may have been gained in an unscientific way, and better so. He sees, he knows; and the process of his observation and knowledge, and of the expression of his message, is at present past finding out. At the same time, it cannot be said that artists are better without science. It is, indeed, to their advantage to make use of every new fact and discovery; and art in the present day seems to require more and more erudition. An absolute scientific falsity is a distinct blemish. The case cited by Captain Abney of the painter who painted a rainbow inside out in respect of the sequence of colors, and then charged twenty guineas for setting it right, is a good, if apocryphal, instance. Mr. H. P. Robinson pointed out that the picture was not less beautiful in one way than in the other, and this is true as far as ninety-nine out of a hundred observers would be concerned; but, in so far as the painting is for all, and that spectrum analysis have probably still some slight interest in pictorial art, their feelings ought to be considered, and such a defect should certainly have been wiped out, and without charge. A picture may be great and beautiful in its truth or its fancy, in spite of

many technical and scientific ignorances, but it would be better still without such blots. A great natural genius may, straight out of the heart of nature, draw beauties in a way that a student of the very latest theories of light relations, perspective, focus, color, would miss altogether, but still it is of the utmost importance that all this knowledge should become part of the equipment of every new man who feels a mission to move our susceptibilities by graphic art. It stands out clear that for the average man the two paths of science and art lie apart or diverge. The man who devotes himself to science and to purely scientific habits and research thereby cuts himself off, more or less, from the development of his artistic perception and knowledge. The sciences of color, and light and biology, and the knowledge of kindred sciences necessary to master these, form a life-work for any one man, as do also the science of appearances and the cultivation of the powers of expression and skill in selection and arrangement. Each man has his natural bent. Nature does not yet exhaust herself in one great stroke by reconciling in any one existence or work the seeming contradictions of science and art.

AN INSTITUTE OF PHOTOGRAPHY.

Adverting to somewhat more practical matters in connection with recent photographic affairs and events, it is hardly possible to pass by altogether, on such an occasion as this, the temporary excitement which has been roused concerning a Photographic Institute, and other attempts to organize concerted action in the form of photographic surveys, geological, local, archæological. Some good work has been instituted in the latter directions by scientific associations, and by a few energetic provincial photographic societies, but it seems to be a matter of some difficulty to secure anything like combined action among photographers. Such an end can only be attained by associating those interested in the several applications of photography. The great schemes for an Institute of Photography, in which students could be adequately taught and trained in photo-mechanical processes, in industrial applications of photography, and in methods of scientific inquiry, seem unfortunately to have now been lost and forgotten, notwithstanding the admirable outline suggested in the paper read by Professor Meldola. If such a College or Technical Institute is to have promising initiation, the first steps must evidently be dissociated from any one association or clique, and even from those who might be called on for some support, namely, those directly interested in photography commercially. Speaking as a practical organizer, I think that with a purely scientific and practical body urgently called together, in the first instance, by such a committee as Captain Abney, Professor Meldola and Sir Henry Trueman Wood, and chiefly composed of certain representatives from the leading scientific societies—astronomical, chemical, engineering, meteorological, and the like—a dignity would be imparted to the movement which would possibly secure wealthy, energetic and influential support.

The initiation of a nationally useful enterprise of this kind might be held to come within the scope of the work of the Society of Arts, seeing that the movement is so intimately associated with progress in science and in art, and aims to fill a gap which constitutes a national misfortune. Under the auspices of an independent and powerful organization the undertaking should surely meet with success, and there would no longer be felt the frequent necessity for going abroad to find practical craftsmen in photo-mechanical processes. The question as to whether photographic art should be included specially as a study in the curriculum of such a college seems to be a matter of divided opinion. For myself I hold there is very great scope for teaching in this direction, and such an institution could not be considered complete without due provision for instruction in portrait and landscape picture-making. At the same time a complete photographic college with laboratories would be a great task to contemplate at the outset, and the first and most probably self-paying department which suggests itself is instruction in photo-mechanical processes. Probably one of the best introductions to the initiation of an Institute movement would be the holding of a fully repre-

sentative photographic exhibition, in which the many applications possible to photography should be practically illustrated in separate scientific departments, and the art section placed separately. In face of a cry for a technical school of instruction in the industrial, scientific and artistic applications of photography, it is a matter for some surprise that such an exhibition, which would be the best practical evidence of the opening and scope for a teaching Institute, has not been arranged. I believe it would prove a natural and easy step to what is desired.

A RECORD OFFICE—PHOTOGRAPHIC EXHIBITIONS.

Suggestions have also been revived for the foundation of some kind of State record office, and the value of permanent photographs of many subjects, objects and individuals in the future world, if judiciously classified, certainly be found to be as great as that of most printed and written documents, some of which, indeed, are priceless. But there seems to be great difficulty in making and centralizing such collections, and each division of applied photography is left to make its own disjointed collections. There is a gallery, or portfolio, of photographic portraits of prominent men and women in course of accumulation, due to the initiative of the Amateur Photographic Association, and deposited, I believe, at South Kensington Museum. Such permanent photographs, more particularly if free from much, if any, retouching, should, in time, help to prove the need for a still more extended work in the same direction.

The subject of photographic exhibitions naturally finds a place in my remarks. I think the tendency in that respect must, from an artistic standpoint, be held to be satisfactory. The more it is regarded, the more, I am sure, it will be seen that any system of classifying artistic pictures, and judging and giving medals to them, is out of place and objectionable. The public interest which is now felt in all the leading exhibitions is quite sufficient to form an inducement in those cases for exhibiting, and the smaller local exhibitions may be left for the moment out of consideration. The best argument to be adduced in support of this view is the success which has attended the International Exhibition at Vienna, the English Exhibition at Brussels, and the practical repetition of this latter at Lincoln, in all of which, by selection and invitation, a better average of excellence and a far greater credit to photography have been the result. In this connection it will be remembered it has been a frequent custom to divide the art section of photography exhibitions into amateur and professional classes. For this, I think, there can be absolutely no defense if the exhibition has any pretensions whatever to be called an art exhibition. In art there can be no division of amateur and professional in the common acceptance of the terms. For the requirements of defensive trade union, or for club and general distinction, the division may be deemed advisable or not, but in art there is only quality—the good and the bad—whether the pictures be for sale or not.

Referring briefly to some recent inventions or introductions which appear to have some relation to art photography, we come first upon the great excitement of photography in natural colors. There is nothing practical as yet in this respect to deal with; but as two of our foremost photographers—one in science, the other in art—have, in the interests of artistic appearances, deprecated any such discovery, may we not ask why this should be so? Should we not rather welcome, with the keenest enthusiasm, a power of color, confident of ability to avoid the commonplace and the mechanical, and of success in applying it to direct artistic purpose?

NEW LENSES.

In lenses there have been the tele-photographic combinations, introduced here by Mr. Dallmeyer, with which magnified pictures of distant objects, little short of marvelous, are produced, and which, in some cases, it is quite conceivable would be applicable to an artistic purpose. Quite recently the concentric lens of Messrs. Ross has been described and introduced, and this would appear to give the power of diffusion and definition, accompanied by rapidity. How the quality of the definition

compares with that of the patient pinhole, I cannot say ; but, as far as I have any experience, I have not yet seen any quality of definition so pleasing as that yielded in diffraction photographs, and I would strongly urge the more extended use of pinhole photography. In connection with lenses for artistic purposes this opportunity may also be taken of drawing attention again to the use of large single lenses opened out to an intensity of $f/4$ or wider, as employed by Mr. Lyonel Clark for portraiture of large heads. The excellent results obtained by him certainly justify and call for a more general practice of the method. Under the head of control by means of lenses, I may refer in general terms to a method of local control, which, I understand, Mr. Van der Weyde has devised, and of which he will shortly give a full description. By this method the relative proportions of features in portraits or of objects in other pictures can be altered at will. The relative increase or diminution of parts can be carried to any extent, and it is evident that the process will be possible of both artistic and grotesque application.

(To be continued.)

[From *Photography*.]

AMATEUR PHOTOGRAPHY IN AMERICA.

BY CATHARINE WEED BARNES.

[Read before the Edinburgh Convention.]

IT will be impossible to enter fully into the question of amateur photographic work in America, and I shall not attempt it, but in considering a subject which necessarily involves comparisons between English and American work and workers it is well, in all fairness, to have some clear idea to start with of how photography is pursued, and the opinion entertained of it in both countries. At present, and this is said advisedly, the English have the advantage at exhibitions of a higher general average of work, though I do not know if it is the case as with us, that many good pictures never reach the exhibition hall.

The amateurs in England and in Europe generally seem to believe in what they are doing, and consider it worth while to give the work proper time and care, working hard if need be to ensure good results, and this is half the battle. There are too many what might be called snap results with us, and the camera is still looked upon largely as a means to kill time, not worthy of respect for its own sake. We are too anxious to do things quickly, missing often thereby what only comes from patient, long-continued effort. There are instances among our workers of almost infinite patience and determination to show what photography can achieve in art, science, and general education, and such are filled with an enthusiasm which enables its possessor to think only of the end in view and bend everything to accomplish it, regardless of mental or physical fatigue. The old painters were ignorant of many of our modern canons of art, but they had a worship for the thing itself, too often wanting in our utilitarian age, and the same may be said of photography. Altogether too many workers begin and end with "detective" cameras. Why? Because there is a delusion abroad in the land that they are no trouble, require no brain exertion, are always available, and the user need not look upon his instrument as anything more than a toy. He generally expects, however, that same toy to possess all the photographic virtues of the widely differing branches of work. Beginning with clean, well-lighted portraiture, for instance, through the gradations of soft, atmospheric landscapes and marines, brilliant snap-shots and carefully managed interiors, it is expected all these may be made in the fraction of a second, and, of course, with a single view lens and cheap camera. I once received a letter, not at all an unusual one in my editorial correspondence, wherein the writer took several pages to explain what he wanted a lens to do, each requirement contradicting some other, and asked me to recommend a cheap one. My answer was that no such lens as he desired had yet been invented. The American worker, especially in small towns, is

very often unable to purchase more than one lens, and yet is anxious to cover the whole photographic field. In such cases I always discourage hand cameras, as, under the best of circumstances, their results cannot fairly compete with tripod work, not merely because the latter is better in itself, but after taking the necessary trouble of setting up such a camera one is apt to take more pains with the picture. Until one realizes all the possibilities of time exposures he does not begin to appreciate photography at its true value. A very encouraging sign of progress with us is the increasing number of organizations devoted to camera work. Hardly a week passes that a new one is not started; and their reports, as sent to our sanctum, show a constantly widening horizon of comprehension regarding the different fields of photographic usefulness being entered upon by workers in different professions. Physicians, painters, scientists of all kinds are utilizing the vast help photography can give them, and are realizing also, aside from that, the great and almost mysterious fascination it can exert, independently, on its own special account. A celebrated painter told me recently that he occasionally used an ordinary snap camera, not daring to attempt any of the actual work or he should neglect his regular painting. I cannot but feel that to do camera work well, through all its countless ramifications—and what is worth doing at all is worth doing well—one must get rid of, and put behind him once for all, the idea that its limitations are as narrow as the illiberal prejudices of the past have settled upon. It is far harder to live down a prejudice than a principle, and that is just the task that lies before photography.

Experience, however limited, has taught me that when a certain effect is gained in photographic work which at all departs from an ordinary photograph, if one attempts to help others by telling how it was done, his effort is looked upon as if he took his auditors behind the scenes at a theatre, and showed them how certain theatrical effects are produced. Probably the same thing is true this side of the Atlantic. A camerist should, above all things, never apologize for anything which will improve his results, because negative or print has been, as the unregenerate term it, "doctored." If a painter refuses to recognize the existence of an obnoxious element which would spoil his picture and simply leaves it out, why cannot the photographer use the only means at his command and obliterate the object, whether on negative or print? Why should one be considered genius and the other a trick? The American public, as yet, has not been able to realize that photography has risen far beyond the high-tide mark of a generation ago, indeed that it is still rising. They are, as a rule, more anxious for something new than for steady progress in the work, but attendance at recent exhibitions has proved to me that photography is winning a high place for itself, if its followers will insist on not lowering its flag to the level of a trade, but keep it where it belongs, among the arts and sciences which are elevating the general education of the world.

One great cause for the success of European workers at our exhibitions is that we do not give enough consideration to the choice of a subject. We have not the wealth of historic scenes which the old world furnishes, and landscapes *per se*, pall on one's attention in large numbers, but we are doing something, I am proud to say, to preserve a record of the historic landmarks we own, before the so-called march of improvement destroys them, to say nothing of also keeping a record of passing events, which afford an important field for camera workers. One of the societies with which I am connected has an historical section, whose members are detailed when any specially important event occurs, to photograph it from different standpoints, thus obtaining a large and varied collection of prints in a comparatively brief time. About a thousand negatives were thus obtained at the centennial celebration of Washington's inauguration as President, which will eventually be of great value. This society's badge entitles the holder to entrance within the police lines at fires, parades, etc., and to work in the city parks. Both the large New York societies also give their members special privileges. This idea as to historical work is spreading among our societies with excellent results.

The Chicago workers ought to take up seriously the matter of photographing at the exposition, and a general protest is likely to be made against what appears to be the somewhat arbitrary ruling of the authorities. Permission should not be indiscriminately given, but under restrictions.

I have not been able to procure statistics as to the number of clubs in our country, but have visited many of the leading ones from New York to California, finding that, as in the case of the Boston Club, with its fine studio and meeting-room, each has some special advantage, but none offer better working facilities than the New York and Philadelphia societies. The New York Camera Club talks of a special club-house, with separate studios, dark-rooms, etc. A desire is spreading among the clubs for more practical instruction than is given in papers or discussions, and nowhere is this better shown than in some of the smaller clubs. The idea, so general here, of camera trips during the summer is also gaining in favor with us. Women are admitted to membership in the greater number of our clubs, and in some of those who still hold out in the good old way their work is hung at exhibitions, their lantern slides shown on the screen, and I have spoken before several clubs which do not as yet admit women members, agreeing, perhaps, with a gentleman friend of mine in one such club, that a photographic society should be considered merely as a sort of masculine boudoir. Women workers are increasing rapidly among us, and it is only a question of time when they will be generally recognized as mentally fitted to improve the educational opportunities afforded by a club. Working by one's self encourages a narrow, prejudiced manner of judging one's methods and results, and women, as well as men, need to have their rough edges taken off by the sharp attrition of severe criticism and discussion. We have, in America, what we call smoking concerts, which women, even if active members, do not attend, and it is only occasionally that a pipe or cigar is seen in the ordinary meetings—never at general entertainments. In the dark-rooms, the stall system is largely used as being more private; but the printing and slide work is done in a large room. Quite a number of our leading workers have their own developing-rooms, and even portrait studios. In my own case, after making a portrait exposure and developing the negative, I take it to a professional friend of mine, who retouches when necessary, and then, unless in special instances, the sitter orders from and pays him for what prints are desired, the negative, of course, being held by me. I have not time to make so many prints, and sitters would not realize the extra labor involved, besides valuing the pictures more if obliged to pay something for them.

In landscape work, the English have an advantage, rather than disadvantage, in their unduly blamed climate, far better atmospheric effects being gained than in our clearer air; but they, as a rule, use heavier cameras than Americans. We rarely use an imported one a great while before beginning to make improvements in it, and, first of all, making it lighter, carrying the latter point even to excess. English cameras, unless of specially seasoned wood, are apt to warp in our drier climate, and I do not believe in, and certainly never saw, a single American worker using a wooden slide in his plateholder.

Most of our finest cameras are made to have the ground glass keep its position, even when the holder is slipped into place, and the tripod top is made distinct from the camera, which latter I am not sure is an advantage.

Practical demonstrations and clear, plain talks seem to be most enjoyed at our society meetings, and when papers are read, it is a rare case when the lecturer is not afterwards called upon by different hearers to explain various points still farther.

Dry plates are most generally used, though a few cling persistently to the wet process. One amateur I know of who coats all his lantern plates, and another, in preparing his, takes into careful consideration the special purpose for which they are to be used.

Only a few of our manufacturers make slide-plates, and I consider it as somewhat

unwise to make them more rapid than the English ones, which actual demonstration has proved to me is the case. It is claimed that slide-making is losing in interest; but such entertainments are always well attended, though the audiences seem to pay more attention to the subject of the slide than to its technical or artistic merit. We trust that European workers will, in time, see the advantages of our size negative and slide-plates, and that there is no actual need of using such very heavy cover-glass. International exchange of slides is an idea worthy of cultivation, and is of value specially in encouraging all to do their best. Several of our amateurs have experimented in camera making, and of shutter attachments there is no end. Our national fondness for haste has found a new vent in a kind of craze for instantaneous (I use the word under correction) pictures of racing, athletics, scientific experiments, etc.; but, on the other hand, that same tendency leads us to constantly invent practical, labor-saving appliances, wherein, I claim, we hold high rank, and many of our best workers have either personally made many such, or suggested them to some manufacturer, while one amateur has invented a shutter which allows several exposures per second. Orthochromatic work, or, I should rather say, color-sensitive, is receiving more attention than formerly, as the plates improve. They were supposed to be very difficult to develop; but, at some of our recent exhibitions, remarkable results from them have been shown, especially as regards flowers and delicately tinted drapery. As is well known, Mr. Ives is the only one among us who has succeeded in demonstrating what is hoped for from color photography, but even yet he has a difficult task before him. Ordinarily, we depend for our finest lenses on foreign makers, but there has been a new one placed recently on our market by a New York amateur which, in the way of reducing harsh contrasts and allowing the shadows and half-tones to appear as in the gradations of nature, practically enters the field of orthochromatic work. It has a violet-color attachment which can be screwed into the place of the rear combination of the maker's rapid rectilinear, wide-angle or portrait lenses. It slightly increases the time of exposure, and the eye is at first disturbed by the use of the colored instead of colorless lens; but the results are remarkable, especially with portraits. The makers are also busy with a tele-photo lens, similar, in some ways, to Dallmeyer's and Miethe's.

There is a reluctance with us, as in England, except among those amateurs who have been given over as incurable, to carry a size camera which will permit the picture to properly represent the view photographed. Even when intended for use in the lantern, the picture-takers too often prefer contact slides, simply, it would seem, because their physical strength is really or apparently inadequate to the carrying an 8 x 10 or 5 x 7 camera for the negatives, to say nothing of the extra exertion of reduction, but as the French proverb says, "That which costs nothing is worth nothing." With regard to developers, many of us like hydroquinone, more still like it mixed with eikonogen, and others eikonogen alone, though I believe the majority, for regular work, prefer pyro and soda, as ammonia does not seem to agree with our plates. It would seem a good plan to test each new developer as it appears, for then and only then can the worker be really justified in making a choice. A number of our workers are expert chemists and always prepare their own developers, not pinning their faith on ten per cent. or any other made solutions. As one of our writers has said, "A fool or a folly is no better for being an old fool or an old folly," and if any method of work or modification of it suits our purpose, we do not wait until it is overgrown by the moss of tradition before recording our acceptance. Film rolls are much used in hand cameras, though magazines are preferred by those who keep to glass plates, and their number is increasing. Albumen and other glossy surface prints have been most generally used, though they are being superseded with our amateurs by the various matt surface papers, especially bromide and platinum.

The question of exhibitions is not yet considered as it should be, a valuable factor in photographic education, and we do not have enough of them. I cannot but wonder

sometimes that judges are found willing to face the almost certain blame attaching to them, no matter how conscientious they may be. They are fallible, very much so, like most of us, and naturally praise what seems good to them, whether the general verdict agrees with theirs or not. The true benefit of an exhibition is gained when one ascertains, not merely wherein his work excels, but wherein it is deficient. The general impression is growing that boards of judges should not be formed exclusively of either photographers or artists, as each is apt to be influenced by the prejudices of his own special education.

When will it be understood, both sides of the Atlantic, that photography in its dual nature of art and science is not necessarily a house divided against itself, and why is it not possible, as in the story of the gold and silver shield, to look at the question from both sides? Americans have not shown their full strength at European exhibitions, largely because notices of such rarely reach us in time for us to prepare and send any special work, and some international arrangement ought to be made, certainly on our side, to obviate the annoying delay in the Custom House. But I do not propose to discuss the tariff question.

Photographic literature should not be entirely passed over, and its importance is shown not alone in journals especially devoted to its interests, but by the way in which it is leavening our whole American literature. The daily press in many cases publish a photographic column, constant references are made to the subject, and many of our magazines give considerable space to articles on the work, or illustrate their pages from the results of the camera. Even the way in which the newspaper reporter attempts to be humorous on the subject shows a general interest in it. We have several magazines devoted to photography, professional and amateur, and they have a wide circulation. Our readers demand a great deal, being very particular also how it is presented, and those who undertake to furnish food for the average photographic brain have by no means an easy task.

It is often asked me if photography is not dying out, but I can most positively declare that with us it is most constantly growing. There are almost daily inquiries of every one who is supposed to be an authority, as to instruments and methods of work, and it rests with our great army of amateurs to make their own place in the world.

Believe what you are doing and people will believe in you. The work should be followed not merely for personal credit, but for the work's sake and its value as a mental and moral education. I am glad that America has several representatives at this convention, feeling it would do much to strengthen the bond of comradeship between kindred bodies of workers. There should be only a sense of generous emulation on each side, and the tie of relationship not be weakened though the ocean lie between us, for each can and should gain by mutual help.

As our great poet Lowell says :

"For mankind are one in spirit, and an impulse bears along,
Round the earth's electric circle the swift flash of right or wrong.
Whether conscious or unconscious, yet Humanity's vast frame,
Through its ocean-sundered fibers feels the gush of joy or shame,
In the gain or loss of one race all the rest have equal claim."

THE WATKIN'S EXPOSURE METER.

To the Editors of Anthony's BULLETIN:

The experience of a number of friends of mine induced me to try the Watkin's Exposure Meter, and I must say its results have more than pleased me. I am positive the instrument is a capital thing for the amateur photographer to try, especially in landscape work, which he does most, enabling him to obtain results which would be impossible to get by the ordinary method of guessing. By careful

usage it will enable him to judge of the value of light just the same as many years' experience have enabled a person to judge of the value of light by the appearance of the scene on the ground-glass. I think that the agents in this country would do well to make an exposure of the different plates and have them published; and these exposures should be made quite often, for I am certain from experience that some of the plate markings in the English book are hardly correct, and it is a great nuisance to have to make trial plates of every new batch you buy. Then, possibly, the markings, say, for the *S* factor, should be a little higher, considering that they are for the English climate. For instance, landscape is given as 100. Now, we know the climate of England is far more moist than ours, and the leaves of the trees are greener. At this time we all know that the leaves of the trees assume a somewhat yellowish hue, and are therefore lighter in color than in England, and consequently the *S* marking should be so much higher than 100. This, of course, must be learned by experience in this country. If the new beginner in photography would purchase a Watkin's Exposure Meter and carefully study it, I am sure that the plates he will save in the season will much more than pay for the expense of the instrument. In dark places, forests and rocky scenery it is invaluable. For instance: I exposed a Cramer *C* on a lot of dark rocks in a badly lighted wood. Judging from my experience, I would have given about ten seconds. The exposure meter said twenty-five. I took the meter's advice, and made a beautiful plate.

H. T. DUFFIELD,
Of New York Camera Club.

ANSWERS TO "A TOUCHING APPEAL."

WE are glad to acknowledge the receipt of the following amounts as subscriptions to the H. H. Snelling fund.

| | |
|------------------------|---------|
| C. D. Fredricks..... | \$10.00 |
| Alexander Beckers..... | 25.00 |
| F. W. Guerin..... | 1.00 |
| E. Long..... | 5.00 |

Other subscriptions are promised, but the amounts have not yet been stated. Those given above have been received, and sent to Mr. Snelling. Our charitably disposed readers may send any amount they please, but send soon and help while you may.

OUR ILLUSTRATION.

THE frontispiece of this issue of the BULLETIN is from the studio of Mr. George G. Rockwood. In addition to being an excellent portrait of Miss Marie Jansen, the popular actress, it is a capital illustration of the judicious use of the electric light. If the print is carefully examined, it will be found that the negative from which it was made received no retouching. Yet the prints show a remarkable clearness and freedom from defects, which we must attribute to Mr. Rockwood's skilful use of electric illumination. Perhaps we may succeed in getting this busy artist to write us an account of his method of procedure; at present all we can do is to present the results for the interest of our readers.

ANTHONY'S Photographic Bulletin.

EDITED BY

Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by **ARTHUR H. ELLIOTT, Ph.D., F.O.S.,**
and a corps of practical assistants.

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E. & H. T. ANTHONY & CO., Publishers.

[From the Foochow Echo.]

THE FOOCHEW CAMERA CLUB.

ON Wednesday evening, the 18th of May, this society held its second general meeting in the club rooms, the President, Mr. G. Siemens in the chair. There were present a dozen members.

The minutes of the last meeting were read by the Honorary Secretary, Mr. Mencarini, and confirmed.

The Chairman announced the election of two new members, bringing the roll of this young society to 22 members.

With a few appropriate remarks the Chairman asked Mr. Rentzsch to read his paper on "The Art of Grouping."

Mr. Chairman and Gentlemen:

In a place like Foochow, where we have so few amateur photographers, it is somewhat difficult to find a subject which shall be interesting to all the members of the club.

In hunting round to find something suitable, Mr. Mencarini and myself thought that perhaps a few words on the posing of groups might be interesting, for although it is to be regretted there are so few actual amateur photographers in the place, still we at all

times find ourselves members of a group, and of professional help as regards the posing there is none. The poor Jap is silent in his one language, and it is difficult to see, unless he lifted the members of a group about, like a lot of tailors' dummies, how he possibly could pose it; and as for the Chinese photographers, all art instinct is usually as absent from the Chinese character, as the idea of honesty and truth, so there being no professional help for us, the best thing we can do is to endeavor to help ourselves and try and fix in our minds the few fundamental rules by no means difficult to remember, as to how a group should be arranged.

After a few words on this subject, I will, with your permission, arrange you as a group as badly as possible, and afterwards correctly, as well as I can, and Mr. Mencarini will take a flash-light picture of both, which he will proceed to develop, with the very last of seven-syllabled developers.

The first thing to consider is the background; trees as far as possible should be avoided, the light falling on the leaves causes white spots in the picture, producing a very disagreeable effect. A light-colored wall is as good as anything, or, better still, the front of a house; only, then, the group should be placed well in front of it, so that the building may be slightly out of focus and not, by its detail, detract from the figures, which, be it remembered, should be portraits.

The members of the group should be cautioned on no account to look higher than the top of the camera, and those on the right and left should look at it, not with the eyes only, but by slightly turning the head.

As far as it possibly can be avoided, do not have two heads next to one another on the same level, and do not have two ladies in light colored dress one beside the other; separate them by some one in dark clothes.

Arrange the group so that tall persons are in the middle and short persons at each end; and in the case of ladies wearing white dresses or colors which are white to the photographic eye, place them in the front row.

The professional photographer frequently says, "Please put on the beginning of a smile," but as this usually results in a complete grin, and in some cases even a grimace, it seem to me far better to tell people to lightly close the lips, for nothing looks worse than to see a lot of people with their mouths half open in a semi-slobbering condition.

It is impossible in a short paper like this to enter into the deeper portion of the subject

regarding the balance of the picture and so on, but if the foregoing rules are remembered, there may be some hope that the average group taken in Foochow will be somewhat improved.

The preceding rules may be summarized as follows:

No trees in the background.

No looking higher than the top of the camera.

No two adjoining heads on the same level. And no mouths open.

Aided by the Honorary Secretary, the lecturer took two flash-light groups of the members present, one allowing the members to place themselves as best they chose and another placing them in an artistic way. The plates, 10 x 12, were then developed in the society's commodious darkroom, and resulted in two brilliant negatives.

After the usual votes of thanks, the meeting adjourned.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. Correspondents will please remember this. No attention will be paid to anonymous communications.

Q.—S. and W. writes: Will you kindly inform us how to make enameled photos, or refer us to some work on the subject?

A.—Certain printing paper will give the enameled or glacé finish by simply squeegeeing them, while wet, face downward, upon a hard rubber or ferrotype plate, and allowing them to remain until dry. Ordinary albumen paper may be made to give similar results by squeegeeing them, face down, upon a sheet of glass thoroughly cleaned and coated with

Soluble gun cotton 48 grains.

Alcohol 4 ounces.

Sulphuric ether 4 “

As soon as the collodion is set, slide the glass, face upwards, into a tray of water in which the print is floating, face downward; grasp print and plate together by one end and lift from water, avoiding bubbles, drain, squeegee, and, before quite dry, apply a coating of starch paste to the back. To mount, moisten the face of the mount with a damp sponge and lay upon the print, rub down with a soft cloth and dry under pressure.

Q.—E. N. R. writes: 1. What is the cause, and remedy, when silver bath cuts albumen surface off paper? 2. If silver bath is slightly acid, which is best to neutralize it with, bicarbonate of soda or a few drops of ammonia? 3. If the bath has been previously neutralized with ammonia, will it be safe to change to bicarbonate of soda? 4. To keep a silver bath in good working order, is anything necessary further than sunning, strengthening, neutralizing and filtering? 5. Does albumen paper deteriorate in quality with age (before silvering)? 6. What course is best to pursue with an under-timed negative which does not develop—remaining clear and bright in developer, even if development is prolonged; and coming out, after fixing thin, with transparent shadows? Is there anything which might be added to developer to intensify such negatives?

A.—1. The bath is probably too alkaline. Better make up a new bath. 2. We prefer the addition of bicarbonate of soda as less injurious, if an excess be used. 3. Yes. 4. Nothing, except occasional making up of an entirely fresh one. 5. If properly kept in a dry place, no. 6. A badly under-timed negative is practically hopeless. Force the development as much as possible, even to considerable fogging, and print in diffused light. Intensification of a very thin negative will never make it a good one. Use the most powerful developer you can get.

Views Caught with the Drop Shutter.

MR. ROTE, the well-known photographer of North Queen St., Lancaster, Pa., has recently had an unfortunate experience with a young man by the name of Grant Creswell whom he employed to canvass for orders for crayon pictures. Creswell was to receive fifty cents for each order he turned in, and by supplying a larger number of fictitious ones succeeded in obtaining some \$300 in commission before his rascality was discovered.

WE note with pleasure the opening of a new photographic studio in Lyons, N. Y. Mr. G. M. STANLEY is the proprietor and we wish him all success in his latest venture.

HATHAWAY & SPRAGUE, manufacturers of picture frames and photographic apparatus in Boston, Mass., were completely burned out by a fire which is supposed to have been

started by lightning on the 15th of July last. The entire damage to the building is estimated at \$100,000, partly covered by insurance.

Mr. C. R. DAILEY, of Los Angeles, Cal., suddenly died of heart disease on July 5th, while about to enter the surf for a bath.

Mr. Dailey was a photographer by profession, and was for some time retoucher in Steckels' gallery. He had many friends in that city, who deeply mourn his demise.

THE rooms of the SYRACUSE CAMERA CLUB were considerably damaged by smoke and water in a fire which occurred on July 11th in the Butler Block of that city.

The upper floor, occupied by HENRY J. ORMSBEE, photographer, was completely gutted, causing a loss to him of about \$2,000, partly insured.

This is the second fire occurring in this building within the past month, and is supposed to be of incendiary origin.

Messrs. BULLARD & DETTMER, of Muncie, Ind., are mourning the loss of their studio and apparatus, caused by a fire, which broke out July 5th in the building occupied by them. Their loss is estimated at \$2,000, with an insurance of \$600.

THE three-story brick building on the corner of Fulton and Main streets, Brooklyn, caught fire July 17th, and damaged to a considerable extent the studio of THOMAS HALL, which was situated upon the third floor. Spontaneous combustion is supposed to have been the cause.

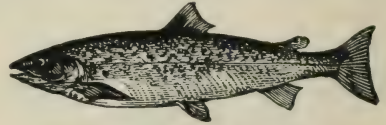
Mr. W. W. WHIDDIT, of Newburg, N. Y., has sold his photographic business to Mr. DWIGHT W. SMITH, of Watkins, New York, who will undoubtedly meet with the same success achieved by his prosperous predecessor.

WE note the removal of the offices of the MAGIC LANTERN JOURNAL and PHOTOGRAPHIC ENLARGER from Salisbury Square,

E. C., to 55 and 56 Chancery Lane, London. W. C., England.

THE third annual convention of the Photographers' Association of Iowa was held on August 2d, 3d and 4th, at Des Moines, Iowa. We expect in our next issue to be able to give a full account of the proceedings and programme, which we are assured was of a very attractive character.

PERHAPS one of the finest judges of blue fish in the photographic fraternity is Mr. R. B. MULLETT, of Kansas City, Mo., and, therefore, when, on his recent fishing trip off Fire Island, he allowed his companions on each side to catch one after another for two whole days, without making any noticeable demonstration towards doing the same thing, it caused no little surprise. This all vanished, however, toward the close of the third day, when he did get down to business—for, as he afterward explained, he was waiting for the right-shaped fish. Mr. Mullett is very fastidi-



Temnodon Saltator Mullettii.
Blue Fish—Species Mullett.

ous in fish, and while many base their claims for eminence on the size or weight of their catch, he contends that shape alone counts, and surely on that basis he demonstrated the correctness of his theory. Mr. Mullett is more firmly convinced than ever that the finest point of excellence to which a fisherman can be trained is that he may be able to discriminate among those that may strike his hook, and allow on board only such as are of absolutely perfect proportions. Mr. Mullett's companions on this trip, any one of whom are ready to back his statements, were Mr. F. A. Anthony, of the firm of our publishers; Mr. George Ayers, H. E. Pierce, of Bradfisch & Pierce; Mr. W. O. Wood, of Philadelphia; and Mr. W. I. Scandlin, of the BULLETIN.

TABLE OF CONTENTS.

| | PAGE | | PAGE |
|--|------|---|------|
| AMATEUR PHOTOGRAPHY IN AMERICA, by Catharine Weed Barnes..... | 472 | LETTER FROM GERMANY, by Dr. H. W. Vogel..... | 454 |
| ANSWERS TO "A TOUCHING APPEAL"..... | 477 | OUR ILLUSTRATION..... | 477 |
| BROMIDE ENLARGING (continued), by Frederick Park..... | 464 | THE APPLICATION OF ART TO PHOTOGRAPHY—No. 5, by H. P. Robinson..... | 457 |
| DALLMEYER'S NEW TELE-PHOTO LENS.... | 449 | THE FOCHOW CAMERA CLUB..... | 478 |
| DISTANCE-PHOTOGRAPHY, by Rudolf Sputaler..... | 460 | THE WATKIN'S EXPOSURE METER..... | 476 |
| EDINBURGH CONVENTION..... | 466 | VIEWS CAUGHT WITH THE DROP SHUT- TER..... | 479 |
| EDITORIAL NOTES..... | 451 | WHAT OUR FRIENDS WOULD LIKE TO KNOW..... | 479 |

ANTHONY'S

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THE PRODUCTION OF POSITIVES IN THE CAMERA.

It has been shown by Colonel Waterhouse that it is possible to produce a glass positive direct from a plate exposed in the camera by the addition of a small amount of allyl thiocarbamide to the ordinary developer.

This fact becomes of added value when it is further considered that a much shorter exposure than would be otherwise necessary is all sufficient to produce a strong and vigorous positive from what would ordinarily be an under-exposed negative.

A case has been cited in this connection where the ordinary exposure for proper development with pyro would have been from sixty to ninety seconds; this was ultimately reduced to two seconds, and yielded a positive in every way satisfactory.

It seems to us strange that a step seemingly so far in advance of ordinary methods should not at once have been utilized in the domain of instantaneous photography.

Such an enormous reduction in the required exposure-time would render many of the present impossibilities easy of accomplishment, and the lack of detail often painfully apparent in many of our so-called snap shots would be remedied.

True, it would be necessary to make a negative from this positive in order to utilize it for reproduction by means of silver printing processes, but that would prove but a small drawback in face of the many advantages obtained.

Portraiture in dull weather would be rid of that terror to so many sitters, a long exposure, and the torture of maintaining that stubbornly evanescent "pleasant expression" would be a thing of the past. Stellar and spectrum photography would receive a new impetus, the positives thus obtained being especially well suited for the transfer to the copper plate and the subsequent etching and printing processes.

Apparently, the principal difficulty encountered in working out this process has been that of obtaining clear lights and good detail in the shadows. This may be partly remedied by prolonging the development and allowing the reversing agent plenty of time to act. If the image thus produced should prove too dense for printing purposes, it may be reduced after fixing with bromide or chloride of copper.

The thiocarbamide may be easily prepared by shaking some oil of mustard together with six times its volume of strong ammonia, and allowing it to stand in a stoppered bottle for some hours, until the oil has absorbed all the ammonia possible. Pour the solution into an open vessel and allow the excess of ammonia to evaporate; filter the resulting solution, evaporate it down and allow it to crystallize, when the mother liquid can be poured off and the remaining crystals purified by recrystallization.

Prepare a saturated solution of these crystals in water, and add 2 to 8 minims of it to the developer, according to quantity used for the plate. A somewhat extended continuation of the developing action will be found to produce the most satisfactory results.

Colonel Waterhouse recommends in some cases to treat the plates before exposure to a bath of five per cent. nitric acid or three per cent. bichromate of potash. Ordinarily, it is as well to omit this, as some brands of plates will not withstand the nitric acid treatment, and the bichromate of potash bath will always sensibly diminish the rapidity of the emulsion.

The substitution of a compound of the thiocarbamide with ammonium bromide, known as tetrathiocarbamideammonium bromide, seems to be somewhat more manageable, but requires a little longer initial exposure in the camera.

This salt may be prepared by dissolving one part of ammonium bromide in as little strong alcohol as possible, and adding to it a strong, hot alcoholic solution of pure thiocarbamide. Continue boiling for some time, and then allow to cool. Any crystals, which may be formed on cooling, should be redissolved in alcohol for use.

Five drops of this strong alcoholic solution to the ounce of developer will generally prove sufficient; if necessary, more may be added during development.

The action in this case seems to be at first the ordinary deposition of metallic silver where the light has affected the sensitive medium, and as subsequent reconversion of this reduced silver into a haloid salt, such that it may be dissolved out when the plate is immersed in the hypo bath. It has been further demonstrated by Colonel Waterhouse that the action is, partly at least, an electro-chemical one.

It is not, however, our intention to enter into a discussion of the various hypotheses regarding the reversal of the photographic image. Our present intention is to bring to the notice of our readers a development in photography which seems to promise much to anyone who will undertake its further investigation and elaboration.

Another method of producing positives in the camera, which, while not perhaps opening up the same field for investigation and possible development as the foregoing one, still seems to us to be worthy of attention, is that of M. Rossignol.

This method is based on the fact that the reducing action of the developing bath upon the haloid silver salts which have been affected by light, is directly proportional to the amount of light which they have received.

In other words, if we can dissolve the metallic silver which forms the negative image, there will remain upon the plate varying thicknesses of unattacked bromide of silver, corresponding inversely to the amount previously reduced, that is to say, to the shadows of the subject. If, now, we again place the plate in the developing bath, after exposure to light, the silver salt will become blackened and will give us a positive image.

The main difficulty encountered here is to find a suitable solvent for the silver. These are few in number, and most of them attack the gelatine coating strongly. This may be surmounted, however, by transforming the reduced silver into a salt more or less insoluble, but incapable of being again reduced by the subsequent action of the developer.

Bichromate of potash has been found to give excellent results in this connection, and the method of procedure is as follows:

A rather over-timed exposure is first given to the plate in the usual manner; one which, when developed in the regular way, would give a strong intense negative. When the negative image is completely developed, the plate is well washed, in order to remove as thoroughly as possible all traces of the developer, as it would prove antagonistic to the action of the following bath. Now, without fixing, immerse the plate in a 4 per cent. solution of bichromate of potash. Ordinarily, the image will commence to turn yellow almost immediately. If it does not, add a few drops of nitric acid.

This operation and the following one should take place in daylight. The chromate of silver is of a different color from the bromide of silver, and thus the image will not completely disappear, but the plate should be allowed to remain in the solution until every trace of black has vanished.

The plate should now be well washed, and during the operation the image will gradually become weakened, owing to the slow dissolution of the chromate of silver.

Place the plate once more in the ordinary developer, preferably some that has been previously used. Gradually the bromide of silver which was not at first attacked will darken and the entire surface will become blackened. When thoroughly developed, wash and fix in the ordinary bath of hyposulphite, which dissolves only the unattacked chromate of silver, and the positive image will appear complete.

EDITORIAL NOTES.

THE difficulty that has been met with in the past in coloring photographs is in a fair way to be materially lessened by the introduction of a series of colors, which are produced with albumen as the basis or vehicle of the coloring agent. These colors are said to be capable of burnishing hot, if first coated with collodion.

ANOTHER and entirely different manner of treatment for colored effects has lately been introduced by C. Schultz, of Berlin, which consists in treating a special kind of silk with a sensitive coating, printing the subject thereon, and applying the colors in the form of pastels, to the back of the picture. It is said

that the effects obtained in this way are remarkably soft and rich, and much is expected of the development of the process.

WE would acknowledge the receipt from J. S. Wooley, of Ballston Spa, N. Y., of some very dainty portrait work. Mr. Wooley has been in the business but a short time comparatively, and is a young man, but his work is full of that dainty grace in pose and almost indescribable finesse in all its stages, that marks an artist. The prints are on aristotype paper, too, which certainly serves to bring out many of the finer points of detail that would be lost on any other medium of which we know.

THE California Camera Club, with its characteristic energy, is making preparations for a grand exhibition of prints early in September and are going about it in a thoroughly business-like way, sending printed postals to each member, with blanks to be filled, as to the number and nature of the prints he will contribute. A fine composition set of English slides were shown before the Club on the 10th inst; and the twenty-seventh illustrated lecture is announced to occur on the 26th, the subject of which is "From the Mississippi Delta to the Columbia."

THE recent law which makes it mandatory on every Chinaman residing in this country to be photographed and registered and a description of the color of his eyes and other personal character marks to be written in red ink across the face of his picture, would seem to entail a very large job on those emissaries of the Government in various parts of the country who may be selected to make the photographs, for when we consider that each sitter is compelled by law to have three copies made and that there are said to be between 130,000 and 140,000 Chinaman who would come under the provisions of the law, it is readily seen that it will provide work for some of the craft, particularly in those States where the Mongolians most do congregate. The result will also prove interesting food for study to ethnologists, phrenologists, etc., in the future.

WE have before us two prints from negatives of live oaks in the cemetery of Bonaventura, near Savannah, which leave little to be asked for in the way of excellence in matter of detail. The distant glimpses of sky between the thick masses of foliage are clear and white, while even the corrugations on the bark of the near-by tree trunks are full of detail and distinctness. The amateurs of Savannah have formed a society now numbering thirty members, under the following officers: J. A. Bates, President; S. A. White, Vice-President; J. de Bruyn Kops, Treasurer; C. E. Yonge, Recording Secretary; and E. N. Hopkins, Corresponding Secretary.

SOME excellent photographs of the recent occultation of Mars by the moon have been secured with the new Brashear objective in use at the Kenwood Astro-Physical Observatory in Chicago. Several of these negatives, which were made by Mr. G. W. Ritchie, have been reproduced in half-tone blocks with excellent results, and serve to illustrate the current number of *Astronomy and Astro-Physics*.

THE Lowell (Mass.) Camera Club enjoyed the opening of its new club rooms on the evening of the 5th of this month. The appointments are com-

plete in the extreme, and the club has occasion to congratulate itself on the efficient work of the committee who have had its preparation in hand.

THE New Orleans Camera Club are about to change their quarters, and will, after next month, be located at No. 9 Union street, in spacious and luxurious apartments. Their opening will probably take place about the 5th or 6th of September.

THE Photographers' Association of Iowa have just closed a most successful three days' convention at Des Moines, which was largely attended and enjoyed by all. When it adjourned, it was for two years, with the idea of attending the Chicago Exposition next year instead of holding their regular State Convention.

Mr. FREDERICK E. IVES' patient work and great measure of success has been recognized by the Society of Arts of Great Britain, who have bestowed on him the honor of a silver medal for his paper on "Composite Heliochromy" read before it a short time since. Mr. Ives' work is by many considered to be the nearest approach yet attained to success in photographing in the colors of Nature.

THE new Star camera, in use by Prof. H. C. Russell, Government astronomer at Sydney, Australia, is said to be in some respects unique. It has two combinations of lenses for use with the enlarging camera, one having a magnifying power equivalent to a focal length of 47, and the other of 180 feet. Very satisfactory pictures of the moon, as large as $5\frac{1}{2}$ inches in diameter can be made with the former in from three to four seconds, though it has proven more advantageous to reduce the aperture, and increase the time to about twenty seconds. The enlarging lens is constructed of two lenses, each of equal focus, mounted convex sides together, and separated five-eighths of the sum of the foci of the two.

IN referring to the first part of volume II of the Bulletin of the International Committee on the chart of the sky, *Astronomy and Astro-Physics* comments upon the standard of exposure of plates for stars of the eleventh magnitude, and states that a uniform exposure of sixty minutes will be adopted for all the chart plates.

THE Photographic Association of Ohio was in convention at Columbus on the 10th and 11th inst., and from all reports that have reached us, enjoyed a most pleasant and profitable meeting. The meetings were large and enthusiastic.

ON the 7th, 8th and 9th September, the Photographic Association of Canada is to be held at Toronto, and the Fraternity across the border seem bent on making a big thing of it. A number of regular and special prizes are offered, and the field for competition is sufficiently wide to give everybody a fair chance for something.

AN English amateur adopts the following method for washing celluloid films, where a number are to be treated at a time. He curves the film side inward,

and ties the film in this position with a piece of thread. In this way the water has free access to the film, and a tendency to curl back is overcome. The film does not require to be tightly rolled, but may be simply secured in the shape of a half cylinder.

LETTER FROM FRANCE.

By LÉON VIDAL, Editor, *La Moniteur de la Photographie*.

Photographic Figaro.—*Photography of the Stars*.—*Bibliography: Treatise on Stereoscopic Photography*.—*Controversy between Messrs. Ives and Vogel*.—*Discussion on Orthochromatism, in View of a Work by Mr. Acworth*.—*Photography of the Spectral Rays of the Bright Spots on the Sun*.—*Discovery of a New Metal*.

A publication of large size has been issued by the editors of the newspaper *Le Figaro*.

In view of the daily increase of photographic sport, the *Figaro* has considered it advisable to follow the current by devoting to the photographic art, its inventors and its best-known followers, an illustrated supplement, handsomely printed, which will, whatever its merit, mark an epoch.

This publication is devoted to everybody, whether it be to the general readers of *Le Figaro* or to persons specially connected in photography; but it is, nevertheless, a manifestation in favor of an art, the importance of which has become such that it is thought that the interest it causes can be relied upon to pocket hundreds and thousands of francs to its publishers.

Very little can be said as to the intrinsic value of this work. In fact, it is not of a serious character; it is not scientific, in the strict sense of the word. The subject is treated humorously. Some joking is indulged in, and we are among those against whom such darts are thrown, though we know not the reason why. But that matters little; we hope that the learned men and photographic historians will come to the front and contribute some of their works. The illustrations are by photographic processes, in half tone. In the United States, where this process is so admirably applied, the results obtained in *Figaro Photographie* will be considered as only fair. However, even in France, there are firms who can do better work. One would certainly ask why the house of Boussard, Valadon & Co., which publishes in such a remarkable manner the *Figaro Illustré*, has had no share in the illustration of the work referred to?

However, as the circulation of *Figaro Photographie* has reached, we believe, 25,000 copies, we could not but devote to it the present notice.

In regard to the photographing of stars for the chart of the heavens, we have expressed our regret that the stars cannot be reproduced in their different colors, since ordinary plates only can be used.

M. Duner, Professor of Astronomy at Upsala, has shown that with the optical instruments adopted, the employment of ordinary plates only is convenient; but he recognizes that the work thus undertaken cannot be complete.

The same idea has been expressed by Mr. Romyň Hitchcock in *Science*.

We could not be more of astronomers than the astronomers themselves, so we have to submit. We only regret that this matter is not better studied, or, at

least, studied more continuously, in the laboratories of Astronomical Photography, as we think they should arrive at a more satisfactory solution than the one adopted.

Admiral Monchez, Director of the National Astronomical Observatory in Paris, an ardent promoter of the chart of the heavens by means of photography, has recently died. It is probable that his successor will be M. Tisserond, a most distinguished astronomer.

Among the publications on the theory or practice of photography, there are a large number that are but mere reproductions, in which nothing new can be found. It is not thus with M. Donnadieu's *Trailé de Photographie Stereoscopique* (Treatise on Stereoscopic Photography), published by Gauthier, Villar et Fils.

This work is the most complete that has yet appeared on the subject. It ought to popularize the use, too much neglected, of the stereoscopic apparatus.

The greater part of amateur photographers only know the use of the detective camera, and often, also, the bicycle camera, but it is a loss of time to speak to them of the more detailed applications of the art that give more attractive results.

This is to be regretted, because there is nothing equal to the charm of an excursion made by means of a stereoscope through places that one sees almost as if they were in reality before him. And the day will come when the illusion of relief will be completed by that of color.

Mr. Ives' trip to London has started a controversy between him and Dr. Vogel, of Berlin. We are not to decide in this debate, which is sufficiently clear for every one to judge for himself.

What appears from this discussion is that each believes that he discovered everything; whereas, we should consider, first, the part of the inventor, and then that of the adapter.

The merit of an adaptation is not so utterly to be disdained that one should not take advantage of previous inventions.

Another discussion on the same order of ideas has been raised in regard to some very interesting work by Mr. Acworth on orthochromatism. Already the holders of special patents are in a war of protests, and declare their intentions of defending their rights. In a word, *mercantilism* has taken the place of scientific truths, and when a learned man talks science he is answered with threats of legal proceedings.

It is about time this famous question of orthochromatism was finally decided, so as to cut short some claims that nothing seems to justify.

A French savant has progressed very far in spectroscopic analysis by photographing even the spectral rays of the bright spots in the Sun.

This line of investigation will owe much to photography which permits the registering of such delicate phenomena.

What a beautiful study, this application of photography to the reproduction of spectra! And we would add: use plates sensitized to the different colors or you will only accomplish an incomplete work.

A new metal has just been discovered, which has been baptized *masrium*; at least, so it is reported. But it is well to receive such news with mistrust until it has been confirmed by scientific bodies.

The supposed new metal was discovered in a mineral from Egypt, near

Cairo, and the composition of the mineral containing it according to *La Revue de Chimie* is the following :

| | | |
|--------------------------|-------|-----------|
| Alumina..... | 10.62 | per cent. |
| Ferric oxide..... | 2.63 | " |
| Oxide of masrium..... | 0.20 | " |
| Manganous oxide..... | 2.56 | " |
| Cobaltous oxide..... | 1.02 | " |
| Ferrous oxide..... | 4.23 | " |
| Sulphuric anhydride..... | 36.78 | " |
| Water..... | 40.39 | " |

Doctor Off and Mr. Richmond Droop have called the mineral "Johnsonite," and it seems they have observed that the simple body of *masrium* can be isolated from it.

The appearance of a new metal may be of great importance to Photography. Who knows but that its composition may be of a nature to bring about new photographic applications and discoveries !

PARIS, AUGUST, 1892.

CONCENTRATION.

REV. F. C. LAMBERT, M.A.

HOWEVER ardent one may be in the matter of "taking photographs," one fact stands out clear, viz., that few occupations are more tiring than looking at a miscellaneous collection of photographic prints. When one considers the number of negatives made, relatively large as compared with the few prints that are worth looking at again and again, it is surely profitable to inquire into the reason of this.

The writer has discussed this question with several painters who are free to confess that they often look at photographs with the hope of gathering assistance from them.

The outcome of these friendly inquiries may be narrowed down to a few results, the chief among them being indicated by the word standing at the head of this note, viz., concentration, or, rather, the lack of it. For painters tells us that one great reason why photographs fail to hold interest is that they give too much of everything, and often not enough of one thing at a time. Let the unprejudiced reader recall his last visit to any recent exhibition. What are his leading impressions ? That there were a good number of very fair photographs, but that it is difficult to specify any three or four in particular, or possibly some one or two are well and distinctly remembered, but the majority have left no definite memory at all. Not that they were technically poor, but that their subjects lacked any strong character or mark. In a word, they were of the jelly-fish type, invertebrate—without a backbone. Whatever interest they had for the moment was spread all over the picture, and, hence, "out of sight out of mind" would fairly apply to them. Thus, their defect is not so much positive as negative, *i. e.*, due to an absence of any great merit rather than a presence of any marked defect; in short, they lacked concentration.

There is a story told of a great painter who was visited by a friend. The painter had before him a big canvass, well filled with beautiful painting of many objects. The visitor found him deliberately painting out one after another of these objects of beauty. This curious conduct led the visitor to inquire the

reason of this apparently destructive work. The reply was, "I am trying to see how much I can do without." Compare this conduct with the average photographer who usually tries to see how much he can not only get in his picture, but also tries to get every twig and blade of grass from foreground to distance, microscopically sharp and equally defined. Not only does he move his camera back, and still further back so as to "get it all in," but dives down to the recesses of his lens case to find the widest of wide-angle instruments. The result is he does get it all in, and when the print is produced, the artist asks, "What is it?" feeling that it is not *a* picture, but a combination of abundant material for a dozen pictures. Instead of claiming instant attention, it is bewildering from its too-much-of-everything character.

Let us examine any ordinary landscape photograph. We have in the foreground a cottage surrounded by trees, outbuildings, etc.; a few animals are in a meadow close by; then comes a rustic bridge with stream, overhanging trees, haystack, etc., a few more animals, and, still further off, a panoramic view of fifty square miles of valley scenery; beyond this, three or four mountain ranges, and on top of all an over-painted and rather sensational sky. The next is varied by having a church, a waterfall, a few rustic figures, etc. The next rings the changes on a harbor full of shipping, docks, houses, railway station, quay, fishermen, etc. Again and again we say, "What is it?" "What is your theme?" "Why was this point of view selected, and why were all these numerous items included?" Surely they are all not necessary to help the story, the idea, the sentiment, the impression. One elementary law, so obvious that it needs constant repetition, here comes to mind. Mental concentration and diffusion are opposite possibilities, and vary inversely. The more there is to see, to think about, the less can be seen or thought about any one thing. The thinner the goldbeater beats his gold, the more it spreads. A bucketful of water is only a thin layer when it has to be spread over an acre.

What, then, is the practical upshot of this matter? What does the painter say? "How much can you do without?" The first step surely is to know what to aim at—what you must include at any sacrifice. First, settle that point. Know what you want your picture to say, then say it as unmistakably as you can, and don't say anything that is not a part of the story. Stick to your text. The most commonplace object—an old tree trunk, an old boat, bottom upwards, etc., is of importance, and has a beauty all its own and peculiar to itself; but in order to see it, it must be made the apex of your attention. You must look at it, and all else must be made secondary. In a limited sense it must be cut away and isolated from the rest of the world. The great David Cox nearly always took for his subjects such simple, commonplace, roadside objects, but treated them with so much concentrated power that one looks at his pictures and says: "What a gloriously mossy, springy, shady bank is that," etc.

What painters feel and complain of so much in ordinary photography is the want of selection. Too many equally interesting and often quite incongruous objects are presented together. The impetuous camera-man seldom stays to ask himself which of two or three objects attracts him, and thinks to find his easiest remedy in saying: "If I get them all in, I must have the right one." This is not the case. The presence of one may destroy the other.

Despite all that has been written and said about simplicity, yet nowhere is its "presence conspicuous by its absence" more than in amateur portraiture.

In quite half the ordinary amateur's portraits, the background is utterly unsuitable. Anything will do for a background, thinks many a man. This one uses a brick wall in a network of lines; another, an ivy-clad wall. This only is one stage worse by its complex forms and points of strong light and dark; another selects a corner of a drawing room, the wall of which has a paper fearful and wonderful; a few pictures add to the complexity, and just behind the head is a cabinet, displaying about fifty curious objects, gathered from all parts of the globe. To make this complete, one only requires the subscription, "Puzzle—find a portrait."

Another direction in which this lack of concentration makes itself felt is in the area of subject selected.

It is only given to few men to excel in many branches of work, yet it is often the case to find an amateur, who can give only a small portion of time and attention to the boundless study of photography, "going in" indiscriminately for a new branch every time he handles his camera. The old saw tells us that the "Jack of all trades is master of none"; but there is no need to carry the concentration to that extreme state, such as we are told was the case with an astronomer who was so much absorbed in the study of other worlds that he did not know a potato from a turnip.

In the majority of cases, however, it can scarcely be doubted that better work generally, and more satisfactory to the worker himself, would result if he were to find out, by a few trials, what particular line of work was most congenial to his natural tastes, and then to concentrate (but not necessarily completely absorb) his attention in that direction. In this way, by somewhat circumscribing his area of work, his judgment of what was not only good, but what was best, would advance; his power of selection, rejection, composition, would advance. Every carefully thought-out picture would be, directly or indirectly, a help towards the next. With increasing experience would be a growing knowledge and deepening interest. His work would have a character quite its own, and hence a value with those whose opinions are worth having.

Tehre can be no reasonable doubt that all true lovers of photography will be glad to see the day when the elder brothers in the art family shall openly express their relationship, and hence every one who would hasten this day will not be slow to listen to and act upon any hints which painters are generally agreed upon offering. And the first of these is: Concentrate the attention upon and advance the study of some one well-loved domain of Nature's manifold regions. Aim at finding the best part. Set forth that part in its best aspect. Concentrate, not only your own attention, but compel the attention of every one who shall see your work, not only to look at it, but to remember it, by concentrating their attention upon the idea you put before them.

"METOL" AS NEGATIVE AND POSITIVE DEVELOPER.

By PROF. ALEX. LAINER, *of Vienna.*

THE most recent developer, which has been introduced under the name of "Metol," might come into general use in consequence of its many excellent properties, particularly as the price is not higher than that of the other developer substances.

Metol is derived from cresol: $C_6H_4CH_3OH$, and is, according to the manufacturer, Mr. J. Hauff, of Feuerbach, near Stuttgart, a salt of the mono-methyl-para-amido-meta-cresol: $C_6H_3CH_3OHNHCH_3$.

It is a white powder, fairly soluble in aqueous sulphite of soda solutions.

This almost colorless solution keeps very good and for a long time in well-corked bottles, without decomposing. By addition of soda or potash a powerful developer is obtained, which can be applied several times in succession.

Based upon many experiments made by the Imperial Institute for Photography in Vienna, the following formula is recommended:

I. METOL POTASH DEVELOPER.—SOLUTION A.

| | |
|-------------------------------|------------|
| Neutral sulphite of soda..... | 100 parts. |
| Metol..... | 10 " |
| Distilled water..... | 1,000 " |

SOLUTION B.

| | |
|-------------|------------|
| Potash..... | 100 parts. |
| Water..... | 1,000 " |

For a plate of 9 x 12 cm., mix—

I.

| | |
|---------------------|---------|
| Metol solution..... | 30 c.c. |
| Potash..... | 10 " |

The picture appears almost at once in all its details, similar to the rapid hydroquinone developer, and intensifies within two or three minutes.

If slower development and better gradation is desired, a reduction of the potash solution and addition of water is recommended.

With a mixture of—

II.

| | |
|---------------------|---------|
| Metol solution..... | 30 c.c. |
| Potash..... | 5 " |
| Water..... | 10 " |

a developer was obtained, which, according to my experiments, gave very clear and well-graduated negatives with a development lasting about four minutes.

If—

III.

| | |
|----------------------|---------|
| Metol solution..... | 25 c.c. |
| Potash solution..... | 2 " |

are taken, a flat negative is obtained at normal exposure.

If—

| | |
|----------------------|---------|
| Metol solution..... | 20 c.c. |
| Potash solution..... | 10 " |

are mixed, a very quick-acting developer is obtained, but which gives a too heavy covering of the high lights in the negative.

These several experiments show the manner of action of the principal ingredients. Bromide of potassium acts for clearing and retarding. The developer does not stain the hand of the operator; it also exercises no coloring action upon the negative. The latter, after fixing in the acid fixing bath, shows a grayish black color of the picture, while the gelatine film remains completely colorless.

If, instead of potash, a soda solution 1:10 is taken, it can be recommended to apply equal parts of the metol and soda solution, to perform a quicker de-

velopment. Metol solution 30 c.c. and 10 c.c. soda solution 1:5 act quickly, and reduce powerfully. If 30 c.c. metol solution and 5 c.c. soda solution (1:10) are taken, very handsome negatives are obtained in from four to five minutes. By further additions of water, the reduction will proceed still more gradually, whereby over-exposures can be controlled.

Presuming that with the new metol developer no more is attained than with the rapid hydroquinone developer Formula I, it still has the advantage of a much simpler composition.

The communication of Dr. Just in Vienna is interesting. He finds that in the metol developer an addition of yellow prussiate of potassium acts to great advantage with regard to the deep black tone, so that in this respect it almost equals the rapid hydroquinone developer. Dr. Just studied principally the applicability of metol as a positive developer. The following table gives the several formulas for chloride of silver development.

The solution proportions are the same as above:

| | I. SEPIA TONES. | II. RED TONES. | III. BLACK TONES. |
|---|---|--------------------------------------|---|
| Metol solution..... | 6 c.c. | 6 c.c. | 60 c.c. |
| Potash solution | 1 c.c. | 1 c.c. | 20 c.c. |
| Water | 84 c.c. | 140 c.c. | { 5 grams yellow prussiate of potassium. 12 drops. |
| Bromide potassium 1:10..... | 10 drops. | 7 drops. | |
| Exposure at diffused daylight } in the room..... } | 4 seconds, 1 m. distance from the window. | 5 to 6 seconds, close to the window. | $\frac{1}{3}$ of the time required for oxalate. |

Hyposulphite of soda twelve drops (1:100) to 100 c.c. developer acts, according to Dr. Just, as an accelerator upon the metol developer without fogging.

The foregoing proves that metol gives, also, very good developing results for chloride of silver papers, and that different shades of color can be obtained by corresponding dilutions and exposures.

MOONLIGHT EFFECTS.

BY C. E. VON SOTHEN.

ENCOURAGED by the many favorable comments on some photographs which under the above title I have lately brought before the public, and in consequence of the general appreciation with which these pictures have met at the hands of some of the best of our craft, I have thought that it might be of interest to some of the readers of the BULLETIN, if the illustration in the present number were accompanied by a description of the method by which such results may be obtained.

As the opportunities for securing their effects are naturally rare, it would hardly pay the enthusiast on marine views to wait for them on wharf or shore, but, like the sportsman in search of the elusive quail, he must shoulder his gun and hunt for them. Now, the question arises, what sort of arm is the most practical for the purpose, and here I would say, as one who has had some experience in this class of sport, choose a small caliber, light, handy and reliable,

and let it and the ammunition be of the best. There is a great show of both hand cameras and plates—*chacun à son goût*. Then let your instrument accompany you on all your trips on yacht or steamer, and in the morning or evening keep a watchful eye on water and sky, for Nature is a fickle dame; your chances for getting in a shot are limited by fleeting moments, and, all your attention and fine equipment notwithstanding, you will often return without the coveted prize. Supposing, however, that, standing in the bow of your boat, you suddenly see the beautiful *motif* of which you are in search, forming before your eyes—the setting sun, not more than 30 degrees above the horizon, just getting covered by a magnificent bank of cumulus clouds, their edges redundant with the glorious light that in a few moments they will hide from view; the dancing waves resplendent in the glitter of millions of reflected rays, and a lonely vessel, black and ghostly, just on the point of crossing on a quarter tack this dazzling, glaring wake of liquid silver. Now your time has come. Have your shutter at its highest speed, your lens diaphragmed for good general definition; aim well and pull the trigger. There! The prize is yours, or at least it ought to be; but, alas, what does the bird avail you, if it gets spoiled in the cooking, and how many are among us that can develop a very rapid exposure with unvarying success? And is it not generally in the development of the very plate that we prize so highly because it cannot be duplicated, because it was secured under the most trying circumstances, that we get in our occasional fizzle? In order, then, to insure success, let us first consider what are the essential qualities that a negative of this class should possess. From experience I should say, have the high lights strong and pronounced, the detail in middle tones and shadows well brought out, but the deepest shadows absolutely clear. For all short exposures I recommend the following developer:

SOLUTION 1.

Rodinal.....

SOLUTION 2.

Hydroquinone..... 12 grains.
Soda sulphite..... 30 “
Water..... 1 ounce.

SOLUTION 3.

Potass. bromide..... 40 grains.
Water..... 1 ounce.

For use take of—

No. 1..... 1 dram.
No. 2..... 1 ounce.
No. 3..... 12 drops.
Water..... 3 ounces.

If the picture develops too rapidly, retard with No. 3 quant. sat.; if too slow, add rodinal, drop by drop, from a small bottle fitted with a quill. As to the rest, proceed in the ordinary way.

Silver on a neutral 50-grain bath, fume half an hour, print until detail in high lights is strongly marked, shadows bronzed; tone to a blue black, fix and wash.

In order to get the peculiar green tint, which is really a *conditio sine qua non* for the intended effect of moonlight, I prepare a filtered solution of aniline green, letter F, in water of the color of absinthe (about 1 grain per ounce), and immerse the print under constant rocking until, when laid face up in a porcelain tray, the desired tint is obtained. The color may be reduced or removed

locally by means of a brush with a 10-grain solution of oxalic acid. The prints should now be slightly rinsed and mounted on white cards.

Transparencies of such subjects, which are the most charming pictures imaginable, may be toned to a fine green with uranium ferricyanide followed by iron perchloride, but this process is rather uncertain, and I therefore prefer covering the black transparency, made on ground glass, with a plate coated with collodion that has been tinted to the required depth with a strong alcoholic solution of the same aniline. The transparency as well as the covering glass should be carefully trimmed, so that their edges coincide exactly, leaving a margin of pure white.

In conclusion, I would say, that as 4 x 5 views are rather too small to be effective, I always make an enlarged transparency first, then from this, after careful retouching, an enlarged negative, which, up to 10 x 12 size, may be made so fine and grainless as to pass everywhere as having been made direct from nature. Also, bromides, size 16 x 20, made directly from the original 4 x 5 negative and tinted as described, have been much admired for their fineness of structure and their general striking effect, and are certainly very charming pictures.

Owing to the evanescent character of all aniline colors, photographs tinted with them should be protected as much as practicable from the continuous action of strong light. *

[From the *British Journal of Photography*.]

EDINBURGH CONVENTION.

PRESIDENT'S ADDRESS.

(Continued.)

PASSING on one step, there has been considerable attention devoted to aids to exposure, particularly in Messrs. Hurter & Driffield's system, on the ground that only by exactly correct exposure can the true relative gradation of a subject be secured. Speaking merely from practical experience, in landscape work, however, the differences in general quality and character in prints from negatives which have received various degrees of over-exposure are not appreciable, provided that a thickly coated sensitive plate be used and the development be arrested at the right time. The great practical result of Messrs. Hurter & Driffield's admirable work seems to me to be the simplification of development for all photographers. In regard to sensitive plates for the artist photographer, the tendency must, doubtless, be in the direction of thickly coated and orthochromatized plates used with screens. In regard to thick plates, what, as far as I know, is a new departure has been made by the introduction of a plate with emulsions of varying rapidities coated one upon the other, thereby giving great latitude in over-exposure, and greatly obviating halation, one of the most insidious and often unsuspected causes of trouble to the photographer.

NEW PRINTING PROCESSES.

It is, perhaps, in respect of new and modified printing processes that the artistic photographer of to-day can be most congratulated. No finer results have ever been produced in color and general quality than the prints obtained by Mr. Lyonel Clark in working what is now known as his toning process in connection with rough-surface papers. There is, however, the doubt of permanency; and the practical and uncongenial difficulties and uncertainties in the preparation of one's own paper are great objections for the artist, who requires all his attention in other directions. Similar appearances have been obtained in bromide papers, and, with the advantage of per-

manency in platinotype and carbon, and of the newer methods, the interesting kallotype process might, perhaps, be applied in the same manner. A striking novelty for the artist photographer is the method recently introduced by Mr. Willis of controlling the character and effect of platinotype prints by slow local development with a brush, the development being retarded by preliminary treatment of the print with glycerine. The beauty of some of the results by this means in the hands of a competent painter-photographer is very noticeable.

PHOTO-MECHANICAL PROCESSES.

Turning for one moment to photo-mechanical processes, there is not much that is new which would seem to have any special application to artistic photography. The use of photogravure by the general worker has not extended as was anticipated, owing, perhaps, to the practical difficulties to be surmounted, and to the greater satisfaction felt in the production of a single direct print, superior, in most cases, in quality to what the engraving process would yield in numbers. As regards photogravures and other photographic reproductions of artists' pictures and drawings for framing and for journal illustration, there is still much jealous opposition among artists and some hangers-on of the press, who take their cue from these artists as to the quality of such reproductions. No doubt, in the cheaper processes, the general gradations of the picture may be modified if the loss be not obviated by special preparation of the picture; but, at the same time, there is retained in these processes or photogravure reproductions so much more of the character and originality of the artist than is seen in any but the very best wood or other engraving that there can, it seems to me, be no doubt about their becoming more and more used.

I have tried to indicate the state of photographic art amongst us. I think we may be proud that there is more interest in pictorial photography, and greater advance in this respect in our own than in any other country. It is hardly fair to form a judgment from the harsh, uninteresting and even grotesque illustrations which are from time to time given in foreign photographic journals, as even those in our own photographic magazines are often very little better; but there are other means of judging of the standpoint in this regard of our brethren in France, Belgium, Austria, Germany and America. I can only say it would be better, in all cases, if these ill-judged illustrations were omitted.

In conclusion, let me urge that we should not fail in keeping up and standing by the dignity and just claims of what we profess and practice. I think I see in the past a steady and even a rapid progress in art photography, and in the future a hope of still further advancement and of a better position. It is this spirit that has animated me in addressing you, and, instead of having to appeal for tolerance, I feel I may make bold to claim a fervor of agreement from you, a union against all enemies and combining to overcome all obstacles to our progress.

We shall be sustaining the true and fitting spirit of this Convention if we can all continue to advance together in the science, the art and the good fellowship of our common object—photography.

—♦—

[From *Photography*.]

THE COLOR SCREEN IN LANDSCAPE PHOTOGRAPHY.

BY CHARLES L. MITCHELL, M.D.

[Read before the Edinburgh Convention.]

THE value and use of orthochromatized emulsion in landscape photography is now fully recognized, but, as yet, there still appears to be considerable difference of opinion in regard to the necessity of the coincident employment of the color screen. It is stated by many of the manufacturers, who at present supply the market with iso or orthochromatic plates, that the use of this valuable adjunct is, by no means, neces-

sary, and, that equally good results can be obtained without it. Having during the past two years made extended trials for landscape purposes of orthochromatized emulsions, coated on both glass and celluloid films, and during these experiments made frequent use of the color screen, a few notes on the principles and methods of its employment may perhaps be of interest. The class of subjects selected was almost exclusively landscapes, and the large majority extended landscapes in the mountainous regions of Switzerland, Norway and Northern Italy, involving distances ranging from ten to one hundred miles. The first year the color screen was used sparingly, but the results obtained with it were so satisfactory that in the following year it was used whenever possible, and the success attending its use was so marked, and the quality of the work so far superior to the portion in which the screen was omitted, that I now am fully convinced that the color screen is an indispensable adjunct for any extended or comprehensive landscape work. The reasons for this opinion are not hard to find. It is a well-known fact that when an open landscape is photographed on an ordinary gelatine emulsion, two serious difficulties are always encountered. These difficulties bear such a relation to each other that the means employed to prevent the one, always increase the evil effects of the other. I allude to the difficulty of obtaining even and harmonious exposures for both near foreground and extreme distance. The rapidly vibrating blue rays coming from the more distant portions of the landscape produce, in an extremely short time, a very powerful reducing effect upon the emulsified silver salts, and that long before the more slowly vibrating rays coming from the nearer and generally darker foreground have had time to properly act on the plate. The consequence is that when proper definition, detail and color value have been obtained in the foreground, the distance has been so over-exposed as to solarize to a greater or less degree that portion of the image. On the other hand, should the exposure be so shortened in time as to obtain proper values for the distance, the foreground is so hopelessly under-exposed as to be but an unmeaning smear of black, devoid of all detail.

All kinds of devices have been suggested for remedying these difficulties. Sky shades, shutters having apertures of different shapes fancied to diminish to a certain degree the exposure of the sky and distance, etc., have at different times been suggested, but none of these have proved of sufficient value to become popular.

The difficulties, as above noted, are particularly noticeable in the case of Alpine landscapes. Here, then, is often a foreground of rocks and dark pines, abounding in dark greens and browns, and opposed to it a distance composed of brilliant snow-white peaks and glaciers, standing out against a deep blue sky, varied, perhaps, with floating clouds. With an ordinary emulsion it is almost impossible to render properly such a landscape, as the foreground will be under-timed and lacking in detail, or else the peaks and sky will be so over-exposed or "burnt out" on the negative as to render the demarcation line between snow and sky almost indistinguishable. When, however, certain coloring agents are added to the ordinary emulsion, as is done in the process of orthochromatizing, an entirely new condition of affairs is brought about. I will not attempt to explain this in detail for it has and will be done by much more able and qualified hands than mine. Suffice it to say, briefly, that while the emulsion is now in its altered character a little less sensitive to the action of the blue rays of the spectrum, it is more sensitive to the yellow, green and red rays, coming from the opposite end of the spectrum. A plate of this character, when exposed to the same Alpine landscape as previously tried, would exhibit much more detail in the foreground, and the distance would be in much better tone. But, although the sensitiveness of the plate, as orthochromatized, is of a much less degree as far as the blue rays are concerned, they are so powerful that they still act too rapidly on the emulsion, and it is desirable to limit still more their effect. This is accomplished by the color screen. A suitable colored medium, in this case yellow, is interposed between the object and the sensitized plate. This medium intercepts the passage of the blue rays to a certain extent, or diminishes the rapidity of their vibrations, and while prolonging thus the exposure allows the reds,

greens, yellows, etc., to pass through without hindrance, and impress themselves fully upon the plate. The resulting image will now represent in much more accurate color tone, as expressed in black and white, the different values of the landscape, giving full detail and softness to the foreground, and showing in the distance white peaks against a darker sky.

For purposes of landscape photography the color screen employed should generally be of a light-yellow shade, except in some special few instances, when to obtain particular effects in a landscape, colored screens of more or less of a red or reddish orange may be found to be desirable.

From this brief explanation the principles which govern the employment of the color screen may be made apparent, and on its very face the theory of its action would seem to be correct and of sound value. And I unhesitatingly assert that when the color screen is properly used, the results will, in every instance, bear out the sound principles of the theory. Landscapes when, while full justice is given to atmosphere, the distant ranges of hills are as clearly defined as they would be to the eye; water which looks like water and not an expanse of snow; foliage and verdure which show the varied shades of greens with which Nature bedecks herself; or the varied tints in an autumn landscape, and clouds of white or pale gray floating on a darker sky, as we see them daily in the heavens. But a color screen should be used with judgment as should every other photographic adjunct, if good results are to be secured. Not for every subject, or for instantaneous work, or generally for objects close at hand, but for the special work for which its usefulness has been explained. Let us for a moment consider this and its practical features a little more in detail.

The first point to be considered is the color screen itself. This should be of glass, perfectly flatted and ground to a true surface, or else it will produce such an amount of distortion as to render it totally unfit for use. In England, I have been informed, one or two firms offer for sale color screens made of yellow pot-glass ground and polished to a true surface. The only one of these I have been able to see was of so light a color, and that more of a brown than a yellow, that I should feel afraid to use it. The quality of others may be better. It is very easy, however, for any photographer to prepare his own screens, and of whatever color he may desire, by a process which I shall now describe.

Procure plate glass, thin, perfectly flat, ground, and free from all striæ or bubbles. The thin plate glass that is frequently used for making color cells and animalculæ tanks for the gas microscope will be found to be excellent for this purpose. After being cut in small squares of the size desired ($2\frac{1}{2} \times 2\frac{1}{2}$, and $3\frac{1}{8} \times 3\frac{1}{8}$, I have found answer nearly every purpose), a square should be flowed on one side, in the same manner as when coating a plate with collodion, with a solution of the coloring agent in amyl-acetate collodion. The coloring agent may be either "aurine" for orange red, or any other coloring matter desired, provided it is soluble in the varnish. For the yellow screen I am in the habit of using an aniline dye called "golden yellow," in the proportion of from five to eight grains of the dye to the fluid ounce of varnish, according to the depth of tint desired. It is permanent, does not fade to any extent, and gives a rich lemon-yellow screen. The amyl-acetate collodion, now extensively used in the United States for the purpose of lacquering gas fixtures and brass work of all kinds, is known in trade by a number of different fictitious names, such as "Enameline," etc., etc. It is simply a solution of soluble nitro-cellulose in mixtures of amyl-acetate, ether, petroleum, benzin, and alcohol, mixed in varying proportions. It can be easily prepared on a small scale by cleaning off the emulsion from a spoiled celluloid film, cutting the film up in small strips (soaking them well in strong alcohol to remove the camphor), and placing these in a bottle with a mixture of one part amyl-acetate, one part petroleum benzin, three parts alcohol, and three parts ether, all by measure. The celluloid swells up and dissolves rather slowly, hence the bottle containing the mixture should be well shaken at intervals for several days. A better collodion is made, how-

ever, by dissolving good nitro-cellulose in the above mixture. When the celluloid is all dissolved, the liquid should be filtered through a little absorbent cotton to remove any loose flecks of dirt. The varnish gives a tough film, clear and free from transversed striæ, and is also an excellent material for varnishing glass negatives or positives, being perfectly waterproof. To resume, the glass square, after having been coated with the colored varnish, is allowed to "set" for a few moments, and then placed aside on a flat surface until the varnish is perfectly hard and dry. Care must be taken to keep it covered while drying, so as to avoid dust and dirt settling on it. The coated plate is now placed on a level surface, film upward, and sufficient pure Canada balsam (white and free from dirt) poured on the plate to make a pool in the middle of the plate of about one-fourth of its area. A fresh, clean glass square of the same size is next taken, and gently lowered on the balsam and plate in the same manner that a cover glass is placed on a microscopic object, and then a gentle and even pressure applied until all air is forced out, and the two glass surfaces are cemented together with the balsam, and are in uniform contact. The cemented plates are now laid aside on a flat surface, and allowed to remain several weeks undisturbed until the balsam has thoroughly hardened. Then the edges are cleaned off, the exuded balsam being removed with a little benzin or benzole, and the edges bound with some strips of lantern slide paper. This color screen can be placed either before or behind the lens. If before, a special hood for each lens must be made to hold it. I, therefore, prefer to use it behind the lens, on the inside of the lens board, when it can be placed or removed in a few seconds. This can easily be arranged with two small brass or wooden cleats, secured down on the inside face of the lens board, and adjusted so that the color screen can slide between them.

The next item is the subject. It is hardly necessary to say that moving objects and all instantaneous work are entirely beyond the scope of the color screen owing to the length of exposure required. Moving clouds can often be satisfactorily photographed when the motion is slow, and the exposure made with the full aperture of the lens, from one-half to two seconds being generally sufficient. Large masses of annulus clouds, and also the lighter and more graceful forms of the cirrus, can be made, when at rest, to repeat themselves on the photographic plate with rare fidelity by the aid of the color screen. There are many days of the year when these remain almost quiescent in the sky, and, as no great stopping down of the lens is needed, a large aperture and short exposure will yield excellent results.

For ordinary landscape work in close proximity to the subject, the use of the color screen is unnecessary, unless some special conditions of color exist. Still life, fruit and flower subjects, however, are especially fruitful fields for the color screen in conjunction with the orthochromatic plate. Here, time is of no importance; absolute sharpness and fidelity of detail can be secured by stopping down the lens, and, with a full exposure, every feature of the object will be reproduced. The principal use of the color screen in landscape photography, however, is in field work, especially where extended country, and often extreme distance, are concerned. Here, the color screen is an absolute necessity in order to secure uniform and satisfactory results. I have photographs in my collection taken from the summit of the Furca Pass in Switzerland, where, while the foreground is harmonious and full of detail, the Alps of the Mt. Blanc and the Monte Rosa groups are distinctly visible, although at least 60 miles distant. I have also noticed that the use of the color screen, when photographing in both Switzerland and Norway, has given much more brilliancy to the dull monotone so often noticed in the photographic rendition of long stretches of bare mountain side, it seeming to differentiate and accentuate the different tones of browns, dark grays, and greens so prominent in such landscapes. In fact, I have grown to rely so much upon the color screen in photographing these extended views that I fear no landscape, no matter how extended, provided it is properly lighted, and I think I can show as satis-

factory results for such subjects as it is possible to compress into the limits of a small photographic plate.

A word may also be said just here in favor of the use of celluloid films. Glass is as yet undoubtedly the most perfect medium of support for the photographic emulsion. But it is heavy, liable to break, and for distant landscape work apt to show halation. This latter, it is true, can greatly be prevented by backing the plate, but it is a tedious dirty process, and involves infinite trouble. Celluloid, as now prepared in the United States, is rapidly taking the place of glass for tourists' work. It is now manufactured almost free from defects, and is so light and portable that a gross of 8 x 10 size will take up no more room, and weigh no more than one dozen of the same size of glass plates. It cannot be broken, and, moreover, is almost entirely free from halation, owing to the thinness of the film and the consequent absence of reflecting surfaces. To illustrate its advantages, I may say that last summer I took a three months' trip through Norway, carrying with me, in a small Norwegian trunk, together with my clothing, sufficient material for six hundred 8 x 10 exposures. The weight of these films was about thirty pounds; the same amount of glass plates would have weighed over four hundred pounds—an almost insurmountable burden, unless one traveled with a baggage train.

It remains to say a few words concerning exposure and development. Exposures for orthochromatic plates should always be fully timed to secure soft and harmonious negatives. An under-exposed orthochromatic plate or film is much more inclined to fog on development, and is much more harsh and lacking in detail than an ordinary plate of the same speed would be if subject to the same conditions. On the other hand, the orthochromatic plate, and even more so the film, will bear an amount of over-timing which would simply be ruinous to an ordinary plate. When a color screen is used the exposure should be prolonged eight or ten times, and my friend, Mr. F. E. Ives, who is world-celebrated for his researches in color photography, has assured me that twenty times is none too much. I have no doubt some advocates of rapid exposures will be shocked by this statement, but when we consider the retarding effect of the color screen, the amount of "leeway" in exposure is in consequence immensely extended. In all such work plenty of time in exposure is necessary to obtain full detail. The distance will take care of itself, so will the clouds, and unless there is a brisk wind blowing they will show up all right in the negative. Furthermore, in overcast and cloudy weather, exposures on orthochromatic emulsions, either with or without a color screen, must be greatly lengthened, much more so than for ordinary emulsions under the same circumstances. For instance, if I gave two or three times the exposure (using an ordinary plate) on an overcast day that I would on a bright, clear day, for an orthochromatic plate (using no color screen) I should give from four to eight times the exposure, and if I did not do so, I should get an under-timed plate. If a color screen is used in addition, the exposure should be increased proportionately as previously mentioned. Most of my failures with the color screen and orthochromatic film have been from this cause—under-timing on cloudy days. There seems to be, under these circumstances, an absence of certain light rays in the atmosphere (yellow, perhaps) which ordinarily affect more quickly the orthochromatic emulsion. After I discovered this I have frequently, after making an exposure, the time of which I had judged should be ample, made a duplicate exposure, in which for purposes of experiment I doubled the exposure, and almost invariably the longer-timed negative came out the best.

Finally, a word or two may be said regarding the development of the exposed plate or film. The developer used must depend largely upon the purposes for which the negative is to be used. If for bromides, lantern slides or transparencies, my preference is for the mixed developer of eikonogen and hydroquinone, it giving negatives possessing the full detail and quick-printing qualities especially requisite. For platinotype, plain silver, and kallotype, I am growing to believe that pyro gives, perhaps,

better results. The steel or blue-gray image produced by the mixed developer gives a density which seems greater than in fact it really is, and in printing processes which tend to diminish contrast it will not give as brilliant and "plucky" a print as will the slightly yellowed pyro-developed negative.

[From Photography.]

DEFICIENCIES IN THE TRAINING OF PHOTOGRAPHERS.

BY HOWARD FARMER.

[Read before the Edinburgh Convention.]

EARLY GUIDANCE.

WHEN it is known in the early life of a lad that he will probably become a photographer, his training should commence during the latter years of his school life. His studies can then be guided in directions which in after years will be directly useful to him in his professional capacity, and he will acquire knowledge rapidly that may later save him much labor and effort.

Where this has been done it will be generally found that the directing parent has been a photographer or connected with photography, and in such cases the same forethought which has guided these early studies into useful channels has probably continued this direction to a successful *dénoûment*.

IMPORTANCE OF CONTINUITY.

But the majority of those who become photographers have their career decided after leaving school—sometimes a good many years afterwards, and it is to these my remarks more especially apply. As an example we may suppose a lad has left school, and not until he has subsequently spent a year or more in holiday-making is the important decision made as to what his life's work shall be, and steps are taken to start him on his career.

Now, while the whole of our sympathies may go to aid the lad's pleasures in the heyday of his youth, the stern competition of life enforces the doctrine that this, the most valuable portion of his life from an educational standpoint, must be utilized to the utmost, and in doing there is no need to deprive him of his pleasures, but they must come in as a complement, forming natural divisions to his work.

It is well known among teachers that the assimilative power for new knowledge usually falls off very much after the age of twenty or so is reached. This is especially the case when a lengthy gap or interval has been allowed to occur in the training, and a mass of evidence to support this occurs with photographers in the very small proportion who, however hardly they may be pressed, attempt even to increase their knowledge; and from the steadfast application required from those who do, it is not too much to say that, independent of the inferior value which knowledge acquired at the age of twenty-five to thirty possesses, as compared with the same knowledge acquired at from fifteen to twenty, the labor and application necessary in its acquirement is three or four times as great at the more advanced age.

It is from considerations such as these we are forced to conclude that in allowing a lad's training to stop suddenly when he leaves school, if only temporarily, for a year, not only are the best fruits, which might readily follow from the cumulative effect of his previous training left ungathered; but, before he has arrived at an age when he himself may fairly be held in some measure responsible, his future status is placed in jeopardy.

INSUFFICIENCY AND UNCERTAINTY OF THE APPRENTICESHIP SYSTEM.

We may next suppose that the lad forming our example is apprenticed or placed to learn his trade with some firm of photographers. In accomplishing this the parent may frequently consider that he has now fairly started the lad on his career, and, so far

as any further training is concerned, leaves it to the care of his employers and the lad's own devices.

Almost universal as such a method of starting a photographic career is, the demonstrable insufficiency of such a procedure is only too complete. In the first place, the professional education, excepting so far as acquiring manipulative skill and a knowledge of some aspects of the commercial economy of the business is concerned, leaves off where it ought to begin, and, although no one will hesitate to admit the prime importance of manipulative skill and of business methods, the trained photographer nowadays requires a great deal more in order that he may attain any status. In the second place, even the manipulative work is confined to one or two specialities, whereas the student wants at this, the very early stages of his career, and before specializing trial practice in all branches. Thirdly, the skill acquired will depend largely upon the attention devoted to the student by the employer and fellow employ  s, which introduces an element of uncertainty into the training, and to which may be added the inevitable proportion of time which is wasted or during which no progress is made. There are also other reasons, which at first sight are not so obvious, why the old system of apprenticeship, which is fast disappearing in other trades, must also in photography disappear, or be largely modified and supplemented, in order that the photographer may not only acquire an honorable status in his profession, but also keep on a distinct level above his neighbor, the amateur.

TECHNICAL AND ART TRAINING—THE PRIME NECESSITY FOR.

After his training has commenced, our supposed young apprentice finds there are at least five distinct sides to his subject, as follows :

1. The Practical or Manipulative.
2. The Technical.
3. The Commercial.
4. The Artistic.
5. The Scientific.

Each of which requires his attention in a greater or less degree, depending upon the character of the work to which he intends devoting his abilities. To convey some definite idea of the average relative importance of each of these divisions, it will be necessary to consider them individually.

1. *Practical*.—The manipulative skill required for most branches of photographic work is not of a very high order; for example, the actual operations involved in the taking of a portrait or landscape negative are all of a fairly easy character, and require but little experience and practice on the part of a student to perform them with regularity and success. Notwithstanding this, the chief help which the student usually derives from his work with his employers is confined to a sufficiency of experience in these easily acquired manipulations. There is, however, one special branch of studio practice which requires a very high degree of skill, and that is retouching, and in other departments of photography, such as working large wet plates successfully, some portions of process work, and others, considerable manipulative skill is essential.

2. *Technique*.—It is not difficult to show that the main foundation of photography, as a profession, lies in its techniques.

Whether in the artistic or scientific departments, in landscape, seascape, motion, architecture, reproductions, or printing processes, the worker who is trained in either of them is the one who excels; and on examination it is found that the success depends not so much upon any particular difficulty in performing the necessary operations as upon a complete familiarity with the minut   and details of procedure, which give the best result upon particular conditions. The reason that several years' training is commonly necessary to get a full percentage of successful results in any one of them is due to the fact that the worker has not had the opportunity of learning, in a systematic form, the minut   and special factor which govern different classes of work, but is left like a

man groping in the dark to find his way slowly and laboriously by the method of trial, and, even if he has the guidance of a fellow-worker, it is one who has found it himself by trial and experience, and can only impart it in the same manner.

Take two beginners of identical abilities, perseverance, and general education; give both the average training obtained as apprentices to a photographer, and give one of them, in addition, systematic instruction in technique. The latter will become as good a photographer in one year as the former will in four years, and will ultimately become a much more competent and independent worker.

3. *Commercial*.—Important as a training in commercial economy undoubtedly is, and which includes such subjects as economy of time, material and wages, value of specialism and enterprise, punctuality, tact, and politeness, treatment of employer and employes, accommodation to circumstances; in fact, all the minutæ which together form the system of a successful business man, this side of his training is one which, in great measure, would be the same in all trades, and which, therefore, is rather included in his general education than in his specially photographic one. That photographers as a body are behindhand in this department of their training is, however, a fact very widely conceded.

4. *Artistic*.—The value of an art training is second to none in the whole range of a photographer's studies, as it invariably gives the stamp of superiority to his work. This is abundantly testified in public displays of photographs, where the pleasing effects in light and shade in composition and selection produced by artistic feeling or culture deservedly take the first rank.

5. *Scientific*.—The value of a purely scientific training to the working photographer has, in my opinion, been a great deal over-estimated. In the early days of the art, when the worker had to go through a series of delicate chemical processes for each photograph taken, and when the successful performances of these processes was alone sufficient to tax the knowledge and skill of one individual, it may have been true that a trained scientist was the best man. But in these days of dry plates and ultra-simplified printing processes, photography, except in its purely scientific divisions, is being lifted above a test of chemical knowledge or optical expertness, and in taking its position as by far the most valuable handmaiden, the fine arts process must, sooner or later, be admitted into partnership with them.

The chief use of a knowledge of chemistry, molecular physics and optics to the photographer, independent of the general educational value, lies in their giving him a clearer insight into the sciences he utilizes in his work, and thereby inducing an interest in it which acts as a powerful antidote to the apathy which is so fatal an enemy to progress.

MORE CARE REQUIRED IN SPECIALIZING.

Another division of his subject is recognized by the photographer more and more clearly as his work proceeds. Having probably started by associating photography with taking portraits only, he becomes conscious of fields and scope for work in which portraiture plays no part; he finds workers devoting the whole of their time and energies to landscapes, to copying, to architecture, to printing, or to process work; and even in portraiture alone he finds one worker devoting himself to operating, another to retouching, and a third to printing. He begins to realize that it is impossible for an average individual to master every branch of photography, and so it comes about that he, like the others, has to select some department and reject others—in fact, specialize.

In doing this, he is usually guided by what he considers the most lucrative portion of the art, and in most cases portraiture seems to be chosen. It is, of course, a matter of opinion as to which branch of photography offers the most lucrative openings; but, in my opinion, the prospects of a landscape or general worker, or a reproductionist, at the present time, are better than those of a portrait photographer, these prospects being not so much in the silver print as in the collotype film, the copperplate, or the type block.

There are other factors also which should be considered in deciding upon the direction in which to specialize. The probationist, while it is still in his power, should be guided more by his own capacities and temperament than he is at present. If he likes indoor life and delights in the human figure, he would be unwise if he did not take up portraiture; but, if an outdoor life suits his constitution and tastes, he would be equally unwise if he did not specialize in landscape or other outdoor work. For town life he must be more expert and specialistic than for country life, for which a good general excellence is better suited. And, again, according to his proclivities, he should choose the artistic or manipulative sides of his subject.

Whatever special branches he ultimately adopts, a good general and art education, and a good technical and trial knowledge of all the principal photographic processes, with their individual applications and possibilities, should form the basis of his work.

EVIDENCE OF THE PRESENT INSUFFICIENCY OF TRAINING.

Evidence of the insufficiency of the present system of photographic training is everywhere present. In the extremely limited range of most workers' manipulative skill, which, while good in itself when carried to sufficient perfection, and supported upon a general foundation, is frequently mere rule of thumb, so that the results are capricious, and, in taking up new processes or methods which the progress of technology or discovery may render advantageous, the worker finds himself but little better than a novice.

In the deficiency of technical, artistic and general knowledge so commonly met with, which, while it is excusable among those who, interested in photography, are not expected to know its *minutiae*, it is inexcusable among those who are supposed by their calling to have been properly educated in the art they profess; and last, but not least, in the surprising facility with which a determined outsider will place himself on a level with workers of a lifetime.

A REMEDY.

It is, I believe, in the spread of a sound and largely extended intermediate or supplementary training to that of the school and the studio that the photographer will not only occupy an impregnable position as a specialist, but will also learn how to utilize to the uttermost advantage the factors and processes at his disposal, and in so doing will both kill the unskilled competition from which he in so many cases at present suffers, and will place his business on the soundest of all foundations.

DISCUSSION.

Mr. S. G. B. WOLLASTON said Mr. Farmer in his paper had omitted one point, namely, that of actual business training. A photographer, however clever, would do but little good without training in clerical work. The average photographer's assistant was lacking in that particular. He had more than once had a good man, who, however, could scarcely write his name. That man was very useful, but only up to a certain point, and when it came to discharging hands that was the sort of man who had to go first.

Mr. O'NEILL, of Birmingham, said that systematic training was what was wanted, and in this particular photographers were lacking in the chemical and artistic branches.

Mr. H. SNOWDEN WARD thought there was an unlimited demand for thoroughly good trained assistants, but the supply was limited, and if men went in for thorough artistic training they would find no difficulty in obtaining good situations, and permanent ones to boot. The impression was that professional photography was overcrowded, but he maintained there was plenty of room at the top.

Mr. WALTER D. WELFORD thought the difficulty arose from the fact that while we wanted all-round men, as soon as a man was engaged he was put on to one class of

work and kept there, so that the assistants got no chance to improve themselves in other branches. He thought the employers were often to blame.

Mr. J. W. ANKRON thought photographers did not give assistants the chance or opportunity of improvement. If an assistant would train himself and push his way he would get on. He himself had begun as an assistant, and had, he was happy to say, arrived at the top of the tree. Mr. Wollaston had said that photographic assistants should train themselves in clerical work. He could get a clerk for £1 a week, but he could not obtain a thoroughly good operator under £3 a week. Young men should go in for training in the proper way, and be bound by indenture for five years. They would then have a chance of learning their profession.

Mr. H. M. SMITH thought Mr. Farmer was aiming at the impossible. He wanted to get a paragon, a man who could do everything, and be a good business man at the same time. As a rule, however, the scientific man was not a business man, and *vice versa*. With regard to what Mr. Ankron had said, he begged to state that they could not get a good clerk for £1 a week, and if they could they ought not to do so.

Mr. ANKRON interposed that the head of a firm would do his own correspondence.

Mr. F. A. BRIDGE asked sarcastically what sized firm was referred to. He thought there were just as many vacancies for good clerks as for good photographers.

Mr. GEORGE MASON said that the whole matter depended on the assistants themselves. The men stuck to one role like actors. They announced themselves as "all-round men," and when they had been engaged they said they could not retouch, and so on. Men should teach themselves other branches of their profession than that in which they were actively and constantly engaged, and should see that they understood their work, and not content themselves with blaming the apparatus. One man had been accustomed to work a Ross lens, and you provided him with a Dallmeyer. He could not work the Dallmeyer, but promised you good work if you would start him on a Ross, or if you had a Ross they had always worked with a Dallmeyer, and so on. It was the men themselves who should give themselves the education, and by-and-bye they would be able to teach their employers.

Mr. A. L. KIDD said his experience was that men were not anxious to do more than one kind of work, and they often absolutely refused to take up other branches. Their want of knowledge was due entirely to the men themselves.

Mr. DEED thought that the traders had not time to train men thoroughly, as they used to do in the bygone days of seven years' apprenticeships, all of which pointed to the want of an institution or training college for the young photographers to enable them to rise to the higher ranks of their profession.

Mr. R. KEENE humorously suggested that the master pressed the button and the learner should do the rest.

The PRESIDENT, in conclusion, said Mr. Farmer's paper tended to the point of the formation of a school for those who wished in which they could be educated before taking an assistant's place, and taught the necessary scientific and artistic training. It was not a very large order, or one that would require too long a time. A year's steady training at such a school would be of far more value as a groundwork than many years' work in the average studio. One of the speakers had said there was a large opening for landscape-photographers, but he begged to doubt it. There was, however, he thought, much to be done in photo-mechanical work, but a landscape photographer would find the living very poor. As to the possibility of a photographer making artistic portraiture a success, he thought there was quite an opening commercially for such work as turned out, for instance, by Mr. Crooke, of Edinburgh, and he thought that there was an opening in that direction. He knew that it necessitated the getting of sitters occupying a prominent position socially, so that people would buy the portraits, and through them become accustomed to the different class of work from that ordinarily put forth by the professional; and he concluded by proposing a vote of thanks to Mr. Farmer for his paper.

AN IMPROVED METHOD OF TREATING RESIDUES.

THE time-honored method of adding salt—common kitchen salt—to the washings from silver prints is always difficult to displace by improved methods; still, as the ever-increasing pressure of competition causes every professional photographer to seek means of increasing his income, it may yet be that, if he see any distinct gain, he will throw aside prejudice, and take up new plans promising gain. At the outset we may say that chloride of sodium is a very unsuitable precipitant for two potent reasons. In the first place, every printer of experience knows that when the silver is precipitated in the ordinary way, a very long time has to elapse before the last traces of chloride subside; it is necessary to have several vessels to be used in succession, so that the one first filled may have cleared sufficiently to be ready to empty by the time the rest are full. If this be not done, the liquid run off is “milky,” in other words, contains a quality of finely divided chloride of silver in suspension, and this goes down the sink and is wasted. Secondly, though the liquid may be quite clear, there is yet a considerable waste; for solution of chloride of sodium dissolves an appreciable amount of silver chloride, and to the extent of this solubility must loss accrue. If any one entertain any doubt on this point, let him very carefully filter a portion of the clear liquid standing over the precipitate, and add to it one drop of the solution of liver of sulphur, which he uses for throwing down silver from the hypo. The considerable discoloration produced is irrefragable evidence of the presence of silver.

Both these objections may be removed by using hydrochloric acid. The impure acid—the muriatic acid of the drysalter—will suffice. It does not dissolve the silver salt, and it causes the precipitation to be more speedy, or perhaps we should say less slow, in falling, and is thus decidedly a gain in material and in time.

But even with this precipitant there is delay, and, where space is of importance, it cannot but be that some silver is wasted through insufficient time being allowed for subsidence. We have, therefore, been making a series of experiments bearing upon this point, and have devised a method which seems to be all that can be desired. Starting with a process employed in metallurgical operations, we first tried the effect of precipitating the silver as a bromide; but, try it how we would, no benefit resulted in any way commensurate with the increased expense this more costly salt involved.

Our next plan was to add to the washings some substance which would cause a more speedy falling of the chloride. After numerous failures, particulars of which need not here be recounted, we brought into use a soluble lead salt, which might be precipitated at the same time as the silver, and, perhaps, by virtue of its great specific weight, assist the silver to fall by enveloping the particles of silver chloride. This plan met with complete success. So far our trials have been merely on a laboratory scale, and thus not with a large bulk of liquid; but there is no reason to doubt that, when put into actual practice, it will act in a precisely similar way.

Taking a quantity of washings obtained from prints to cause the laboratory conditions to, as nearly as possible, resemble printing-room work, and, dividing it into a number of portions of equal bulk, we placed them in a series of test tubes. The first experiment was a mere tentative trial, but its success was evident. A few drops of solution of lead nitrate were added to one test tube, and the precipitant added, a second tube having the same treatment, but with the lead left out. In number one tube the precipitate all sank to the bottom and left a clear liquid in less than a minute, while the second tube was milky half an hour afterwards, and no doubt would take a day or so to become quite clear. We next tried the effect of varying quantities, and we found that there was no gain whatever in increasing the proportion of lead salt beyond a certain small proportion. This proportion, as near as we can judge, would be about one-fifth of the silver salt present.

Next we ascertained the best form in which to add the chloride. The action was

so prompt that it was needless to experiment again with bromides. The result was that, though hydrochloric acid was very quick in action, the ordinary table-salt solution was still better. It was then desirable to see whether a more easily obtainable lead salt—the acetate—would answer. It was quite equal to the nitrate.


We were thus in a position at once to formulate a method for practical use. To each jar of print washing—say, of ten gallons—add a quarter of an ounce of acetate of lead—sugar of lead, it is commonly called—and, when completely mixed, add the usual chlorine, either as “salt” or as “muriatic acid,” stir for a little time, and allow to subside.

We are hoping that before long we may be able to say how the plan works in practice on a large scale, for Mr. Watmough Webster, who joined us in these experiments, has promised to introduce the method into his daily practice, for a time at any rate, and report the practical results attending what may be termed the lead method of precipitation.

OUR LAST PICTURE.

THE illustration in the last issue of the BULLETIN was a photograph of Miss Marie Jansen, of Francis Wilson's Comedy Company, in the play of “The Merry Monarch.” The negatives were made by electric light and printed without retouching. Mr. Rockwood writes us:

“In any test of a process or methods, I cannot but feel that all controllable conditions should be equal. In following the suggestion of my friend Dr. Elliott, to print from the negatives of Miss Jansen without the customary retouching is, so to speak, to handicap the experiment. But in the results attained and presented I have no apologies to make. I think there are few, even of our professionals, who would suspect that they were made by artificial light. Yet, I am not sure but it would have been a fairer test in comparison to daylight, to have “finished” the negatives in the usual way. At the same time we might have been open to the charge of “doctoring” them.

Let me say that the cost of my apparatus above putting in the three electric lights, was less than five dollars. As the company put in the wires and lights at their own expense, my entire outlay for the new enterprise was less than the sum mentioned. As simple and inexpensive as it is, I have seen nothing more practical or successful, though I have witnessed the operation of the expensive and complicated apparatus in use, both in London and Paris. I could see no reason why the electric light should not be treated precisely as daylight, screened and softened accordingly, so I had a light pine frame made the shape of a triangular prism, thus: . I covered it with artists' tracing cloth, and hung it so that the three electric lights were within the screen—the hypotenuse towards the sitter. In a majority of cases the cloth was sufficient; in some I added the usual head screen, giving as soft an effect as could be desired. The photographs of Miss Jansen, which had an exposure of from six to eight seconds, with *black draperies*, were all made without a head screen.

“Does it pay?” Yes, as an advertisement. In small towns, I should think it would “pay” well.

Yours very sincerely,
GEO. G. ROCKWOOD.

All communications for the columns of the BULLETIN should reach us on Monday preceding the day of issue, to insure their publication at that time.

OUR ILLUSTRATION.

THE frontispiece of this issue of the BULLETIN is the result of our efforts to reproduce one of Mr. Von Sothen's beautiful moonlight pictures. As a reproduction it leaves little to be desired, yet in the original Aristo print there are some effects it is impossible to duplicate in any other process. We call the attention of our readers to the article on "Moonlight Effects," which Mr. Von Sothen has written for this issue of the BULLETIN, and commend his methods to their earnest consideration, for his moonlight pictures are of surpassing excellence.

ANSWERS TO "A TOUCHING APPEAL."

WE are glad to acknowledge the receipt of the following amounts as subscriptions to the H. H. Snelling fund.

| | |
|------------------------|---------|
| C. D. Fredricks..... | \$10.00 |
| Alexander Beckers..... | 25.00 |
| F. W. Guerin..... | 1.00 |
| E. Long..... | 5.00 |

Other subscriptions are promised, but the amounts have not yet been stated. Those given above have been received and sent to Mr. Snelling. Our charitably disposed readers may send any amount they please, but send soon and help while you may. *Are there no more who are willing to help?*

PHOTOGRAPHERS' ASSOCIATION OF AMERICA PRIZES.

THE following twenty-seven prizes will be hung up for competition of members of the Photographers' Association, which holds its next convention a year hence, July 18th to 21st inclusive, in the new 2d Regiment Armory in Chicago.

Grand Prize.—A beautiful piece of statuary. Competition for this prize subject to the following rules and regulations:

Competitors must exhibit three plain photographs illustrating the poem "Lucille," by Owen Meredith, the size to be not less than thirteen nor more than twenty-two inches in length.

A diploma will be awarded to the second best exhibit.

Class A.—A diamond badge for the best exhibit of Genre photographs.

Competitors in this class must exhibit six photographs, subjects to be chosen by the competitor and appropriately titled. Sizes of photographs to be not less than thirteen inches nor more than twenty-two inches in length. A diploma will be awarded to the second best exhibit.

Class B.—For the best collection of portrait photographs, sizes 14 x 17 or larger, a gold medal to the first choice, a silver medal to second, and a bronze medal to the third.

Class C.—For the best collection of portrait photographs, sizes 11 x 14 or smaller, gold medal to the first choice, a silver medal to the second, and a bronze medal to the third.

Class D.—A gold medal to first and a silver medal to second choice for the best collection of landscape photographs without figures.

One diploma for the best collection of marine views.

A diploma for best collection of architectural photographs.

Class E.—A gold medal to first and a silver medal to second choice for the best collection of landscape photographs with figures.

Class F.—A gold medal to the first and a silver medal to second choice for the

best collection of six plain enlargements, size 18 x 22 inches, either in silver, bromide, albumen, carbon or platinum.

FOR EMPLOYÉS.

Class G.—A gold medal to the first and diploma to the second choice for the operator making and exhibiting the three most artistic photographs not smaller than thirteen inches nor larger than twenty-two inches in length.

Class H.—A silver medal to the first choice and a diploma to the second for the best set of six retouched negatives with prints from them before and after being retouched.

Class I.—A diploma to the printer exhibiting the most artistic set of six prints.

Class J.—A diploma for the best improvement in photographic appliances introduced since the last convention.

Class K.—A gold medal to the first, a silver medal to the second, and a diploma to the third choice for the best exhibit of foreign portrait photographs, framed or unframed.

Competitors for the grand prize or in Class A can not enter into Classes B or C. All competitors, except in Class K, must be residents of the United States or Canada and members of the Association.

For list of awards, rules concerning exhibits and suggestions to exhibitors, and for space, entry blanks, apply to Adam Heimberger, Secretary, New Albany, Ind.

In Classes D, F and I, we think a careful revision will be made at once by the Executive Committee.

An old "Jay," in his fruitless endeavor to throw cold water on the next convention and everybody and thing connected with it, says, that the average photographer will hardly pay any attention to the convention while he can attend the Columbian Exposition and see the dealers' exhibits, etc.

What will he do if there is no dealers' exhibition at the fair, which will probably be the case.

The present officers of the Association are amply qualified to handle the affairs and will come out with flying colors and a big bank roll in spite of the would-be barriers to the cause.

They have secured the best hall the Association ever occupied for the moderate sum of \$450 for the week. Colonel Judd, of the 2d Regiment, told us a few days ago "the committee 'pulled my leg' by getting me down to \$450 for that hall, for I can get \$2,000 for every week during the fair."

The fair will certainly induce several thousand photographers to visit Chicago that would hardly come on account of the convention alone. Out of this excess attendance not less than 3,000 or 4,000 will visit the Photographers' Association of America, which will more than double that of any previous convention.

Don't be discouraged by any harangues of these old "chestnuts," who do nothing but try to discourage progress. Such people will probably not attend the fair or convention either, and it will be just as well for both if they don't.

AMIDOL.

THE following formula comes very highly recommended. Its action is very energetic and the negative produced is of a good black color.

| | |
|------------------------|-----------|
| Amidol | 7 grains. |
| Sodic sulphite | 77 " |
| Potassic bromide | 3 " |
| Water | 7 ounces. |

The developer thus mixed is as clear as water and the same solution can be used repeatedly. Lantern slides of excellent quality can be produced with this developer from negatives so dense that under ordinary conditions they would not be chosen for transparency making.

With weak negatives the same result can be brought about by after-intensification with mercury and silver cyanide.—*The Photographic News.*

ANTHONY'S Photographic Bulletin.

EDITED BY

Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.,
and a corps of practical assistants.

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Advertisements should reach us not later than the Saturday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, six, twelve or twenty-four issues.

E. & H. T. ANTHONY & CO., Publishers.

LOWELL CAMERA CLUB.

On the evening of August 4th the new quarters of the Camera Club in the Ranel's building were formally opened, and the members and their friends had an opportunity of seeing what has been accomplished within the past few months for the comfort and convenience of the club. The new quarters are all that the most enthusiastic in the art of photography could wish; in fact, it is doubtful if the equipments are equalled in excellence and completeness by those of any club in New England. In the first place, the location is delightful. The building itself is as centrally situated as it can well be, being at the junction of all the street-car lines, and the rooms occupy, perhaps, the best portion of the building. They are on the upper floor, in the southern corner, and they command a splendid view.

But it is the fittings of the rooms themselves that are specially deserving of notice. The dark or developing room is probably the most important feature of the photographer's studio, and that of the Camera Club has been designed and arranged with such care that it may be said to represent the most advanced

and scientific ideas known to the profession to-day. In size it measures 7 x 16 feet and is 10 feet high, and the arrangements for excluding daylight are well nigh perfect. The entrance to it is through a passage which has several zig-zag windings, and when all artificial light is shut off, the darkness is so intense that one would imagine he could feel it. There are four dark lanterns or developing lights, and to economize space they are set in the wall, the screen in front being so arranged as to throw the light at an angle of about 45 degrees. The lanterns are both light and air proof, the ventilation necessary for burning being got through the wall, and the gas jet is lighted by electricity. The front has three screens so that the operator can get light of varying power by using one or more of them. There are shelves between the lanterns to be used as receptacles for pans, baths, etc., and there is a sink in front, running the whole width of the room, with water faucets at different points. The wash box used for washing the plates after they are developed is placed at the right-hand side of the sink. One of the most marked features of the developing room is the splendid ventilation which has been secured.

Adjoining the dark room is the enlarging and toning room, 7 x 10 feet in size. Here, also, is a dark lantern similar to those in the dark room, and there is a gas stove for heating solutions for platinum printing. On the dark shutters in this room is to be placed a daylight enlarging camera, and on the partition near it will be a shutter on a movable easel. This apparatus will not only be useful for the ordinary work, but will be used for making lantern slides, which will be made a feature in the future.

The third and last room is in front, and this is the club-room proper, but it will also be used for printing. It is 14 x 20 feet in size and 16 feet high, and is fitted up with all the conveniences suggested by the character of the club. A large table in the center is piled with papers and magazines chiefly devoted to the literature of photography, and a nice library case on one side holds a large collection of books.

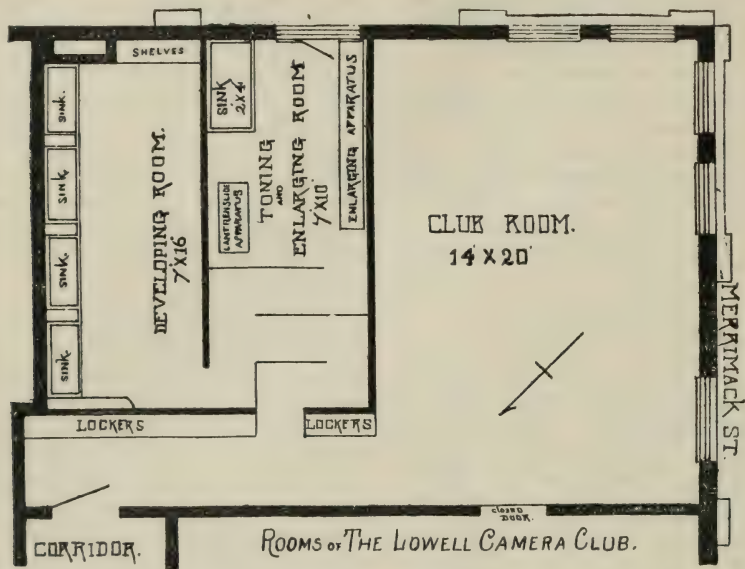
Another feature is a large fixture divided into a number of lockers where members can keep private property, such as chemicals, slides, etc. The burnisher is one of the best things in the market at present, being a new model with many valuable features.

Taken altogether, the furnishings and equipments are such as to reflect credit on all con-

cerned, and their excellence gives the club an opportunity to do work second to none. The club was organized in 1883; it was reorganized in 1889, and it was incorporated in 1892. It has now forty members, and some more

The book is a small 12mo of 200 pages, but from cover to cover is replete with just the kind of information that is daily required by workers in photography.

We commend it to our German readers.



are coming, so that it is expected it will number about fifty in a short time. The present officers are: President, Paul Butler; Vice-President, W. P. Atwood; Secretary, G. A. Nelson; Treasurer, A. S. Guild.

Bibliography.

PRACTISCHES TASCHENBUCH DER PHOTOGRAPHIE, von Dr. E. Vogel. Robert Oppenheim, Berlin, 1892.

This is the second edition of this excellent little hand-book, and contains much that is new and valuable.

Formula for the use of the two newest developers, amidol and metol, are given. Dr. Corrin's method of preventing halation is also given in detail.

The arrangement of the book is especially commendable, and the descriptions, without being of too great length, are sufficiently clear and detailed for the beginner.

The various kinds of photographic apparatus first receive attention. These are followed by a chapter on the dark-room, exposure, the various emulsions and their preparation, developers and development, closing with an epitome of the numerous printing processes now in existence, and the details of their manipulation.

DICTIONNAIRE DE CHIMIE INDUSTRIELLE, par A. M. VILLON, Libraire Scientifique, Industrielle et Agricole. Paris. 1892.

The second part of this admirable work has just been received by us. In it the preparation of nitric acid is brought to a close, and the reader is carried through the subject of carbolic acid, its manufacture and properties.

The illustrations throughout the work are excellent and admirably designed for the purpose of showing the various details of manufacture.

The tables showing the strength for various specific gravities of solutions, both acid and alkaline, seem to have received especial attention, and form quite a noteworthy feature of the publication.

Industrial chemistry is, doubtless, one of the most important branches of the subject, and is here given a worthy and careful exposition.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. Correspondents will please remember this. No attention will be paid to anonymous communications.

Q.—B. O. D. writes: I would be very glad for a few instructions, if you could give them. Have you any chemicals for the purpose of

photographing on wood blocks, and instructions how to use them. Write me all you can about it.

A.—For details of method see BULLETIN, Vol. XXIII, No. 14, pages 438-447. The article to which we refer is entitled "Half-tone Photo Block Printing," and is by Col. J. Waterhouse, S. C. Our publishers can supply you with all the necessary materials.

Q.—W. J. W. writes: I want to find where I can get those little magic photographs that are the size of a postage stamp. They look like a white piece of paper, and then they are treated with a liquid that brings out the picture.

A.—We presume they are similar to those in which the picture is developed by means of the fumes from a lighted cigar. We would suggest that you write to the *Scientific American*, New York City, for the information, as our article on this subject, published recently, was taken from them.

Q.—P. M. and C. writes: On page 410 of your July 9 BULLETIN, we notice an article on Magic Photographs. We remember that at one time such photographs could be purchased in the trade. Do you have them for sale? If so, send quotations and samples, and oblige.

A.—Personally we do not know where these photographs can be obtained, but would advise you to write to *Scientific American*, New York City. See answer to W. J. W.'s query in last issue.

Q.—D. L. P. writes: Will you please give me a good process for printing on silk or other fabrics. Is there any way to remove the yellow stains from a negative which are sometimes seen after intensifying with bichloride of mercury and ammonia.

A.—The carbon process as ordinarily applied is well suited for this kind of work. The fabric is coated with the usual solution of insoluble gelatine and the final transfer of the carbon print is made directly upon it. The full details of the carbon printing process are too long to be given here, but may be found in any good work upon printing methods, or in the BULLETIN, Vol. XXII, pages 38, 80, 111, 191 and 528.

Q.—A. O. C. writes: As you are the principal distributors of the N. P. A. paper, you should be as well informed as to cause and effect in its handling as any one. Occasionally I have been troubled with spots, as you see on enclosed sample. They appear in printing and will not come upon the whole batch, but on occasional prints only. Whether

all of a sheet, or only on one corner, I cannot tell, as I cut all my paper before beginning to print. I have propounded this query to numbers of the profession, but received no answer; does it proceed from insufficient silvering? My bath is 55 to 60 degrees, new, one and three-quarter minutes floating, draw over glass rod and blot, when done silvering, hang up to dry, then fume with an ounce of ammonia to ten sheets in a reasonably close space, fume twenty to twenty-five minutes. May it proceed from the blotter? I am using the same blotters that I did some months ago, and during that time have had none of the trouble, then it had appeared previously with the same blotters. Is it possible that I fume it when too damp? I have fumed without drying at all without producing the spots. May the ammonia be applied too concentrated, too near one spot, too close under the paper, and thus cause unequal action.

Just now I put it in a saucer about eight inches below the paper. I have put it closer, but with a board full of holes above it, and I have fumed this in same way, with no trouble. What causes blistering—is it not too strong hypo? If you will give me a lucid answer you will greatly oblige.

A.—From an examination of the prints you send we should judge that the albumen coating had been partially destroyed by too strong ammonia fuming. Place the saucer containing it further from the paper while fuming. It is a bad practice to use the same blotter too frequently, as perfect cleanliness is absolutely essential to success in silver printing.

The too sudden change from a strong hypo solution to a wash water is assumed to be the principal cause of blistering.

Views Caught with the Drop Shutter.

THE following seems to be rather a unique development of the photographic swindle. A man representing himself as an agent for a photographer has been taking orders and receiving payment for photographs to be taken at a studio which does not exist. The humor of the situation arises from the fact that the name and address is correct, but the occupation of the resident is anything but that of a photographer. In one instance that has come to light, Mr. GUSTAV PFINGSTEN, a cigar manufacturer, of Jersey City, was represented as the proprietor of a photographic studio.

A FIRE originating in I. BENJAMIN'S photographic gallery, 156 West Fourth Street, Cincinnati, O., on the 4th inst., did considerable damage to the building. His loss will amount to nearly a thousand dollars, only partly covered by insurance.

PHOTOGRAPHER FREDRICKS, of 770 Broadway, New York City, has been annoyed by a swindler who represents himself as an agent of the house. Upon receipt of one dollar he delivers to the unwary purchaser a printed card purporting to be good for one dozen cabinets. As he has absolutely no connection whatever with the firm, the holders of the so-called tickets are naturally disappointed at finding them worthless.

THE convention of the Photographers' Association of Ohio far exceeded any of their former ones. Some of the exhibits, notably that of Messrs. Meacham & Sabine, of Youngstown, Ohio, contained some exceptionally fine specimens of photographic work.

J. C. SOMERVILLE, of St. Louis, recently made us a short call on his way to Hyannis Port, Mass. He intends to eventually reach his destination via England and Ireland per Inman Line Steamship *City of New York*. While wishing him *bon voyage* in every way, we fail to see why he takes such a roundabout way of reaching Cape Cod, unless it be to prepare himself for the "southwesters" of Nantucket Sound, when he rejoins his family there.

NEW PHOTOGRAPHIC FIRM IN BUFFALO—BUTTS & ADAMS.—Mr. S. B. Butts, of Tucker & Butts, has withdrawn from that firm and formed a copartnership with Mr. D. F. Adams, who has long been connected with the former house. Both are experienced men

in the photographic business, and having laid in a large and complete assortment of photographic goods, imported and manufactured by our publishers, they will be able to supply promptly every wish a photographer can have. We heartily wish them success in their new venture.

THE newly completed studio of Messrs. BAKER & SCHNEIDER, at the corner of State and High streets, Columbus, O., is one which reflects great credit both to the architect and the proprietors.

An old brick building has been remodeled with wonderful success and the interior has been sumptuously decorated. On July 29th a public reception was given by the proprietors, which was largely attended and pronounced by all comers a complete success. The present building is to replace their old one which was recently destroyed in the opera house fire. Rarely has it been our privilege to see a more perfectly appointed and beautiful studio than this. It is an ornament to the City of Columbus, and reflects greatly to the credit of these enterprising artists.

WE chronicle with deep regret the death of Mrs. A. McDONALD, of South Bend, Indiana. The deceased was a particularly amiable and whole-souled Christian woman and leaves behind her a host of sorrowing friends and relatives. The pallbearers were Messrs. C. A. Kimball, A. Listenberger, William Mack, George T. Hodson, Aaron Jones and John Yant.

TABLE OF CONTENTS.

| | PAGE | | PAGE |
|--|------|------------------------------------|------|
| AMIDOL..... | 508 | MOONLIGHT EFFECTS, by C. E. Von | |
| AN IMPROVED METHOD OF TREATING | | <i>Sothern</i> | 492 |
| RESIDUES..... | 505 | OUR ILLUSTRATION..... | 507 |
| ANSWERS TO "A TOUCHING APPEAL"..... | 507 | OUR LAST PICTURE..... | 506 |
| BIBLIOGRAPHY..... | 510 | PHOTOGRAPHERS' ASSOCIATION OF | |
| CONCENTRATION, by Rev. F. C. Lam- | | AMERICA PRIZES..... | 507 |
| <i>bert, M. A.</i> | 488 | THE COLOR SCREEN IN LANDSCAPE | |
| DEFICIENCIES IN THE TRAINING OF PHO- | | PHOTOGRAPHY, by Charles L. Mitch- | |
| TOGRAPHERS, by Howard Farmer ... | 500 | <i>ell, M. D.</i> | 495 |
| EDINBURGH CONVENTION (continued).... | 494 | THE PROTECTION OF POSITIVES IN THE | |
| EDITORIAL NOTES..... | 483 | CAMERA..... | 481 |
| LETTER FROM FRANCE, by Léon Vidal.. | 486 | VIEWS CAUGHT WITH THE DROP SHUT- | |
| LOWELL CAMERA CLUB..... | 509 | TER..... | 511 |
| "MÉIOL," AS NEGATIVE AND POSITIVE | | WHAT OUR FRIENDS WOULD LIKE TO | |
| DEVELOPER, by Prof. Alex. Lainer... .. | 490 | KNOW..... | 510 |

ANTHONY'S

Photographic Bulletin.

EDITORS :

PROF. CHARLES F. CHANDLER, PH.D., LL.D.

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No. 17.

HINTS ON FITTING UP AN AMATEUR DARKROOM.

As the amateur returns from his vacation, the question of finding some good place in which to develop his pictures often becomes a serious one.

Some enthusiasts aver that there is no place like the bathroom, while others go so far as to loudly praise the virtues of the parlor. For the latter individual there is absolutely no hope; he has sunk too far in the depths of total depravity to be affected by the most cogent of arguments. The case of the former, however, is not so utterly desperate, more especially if he is a married man.

To such an one, the appeals of his better half are liable in time to make an impression, more especially if due emphasis is given to the fact that pyro stains on the marble slab of the washstand are by no means emblematic of the high art which it pleases all of us to think we are attaining.

Seriously, however, the darkroom question is an important one. The lack of any means of ventilation in many of the cubby-holes dignified with the name of darkroom is especially to be condemned.

In almost every house there will be found vacant space in the garret or cellar sufficient for the fitting up of a proper receptacle for the numerous paraphernalia incident to the pursuit of photography.

Of course it is delightful to have an abundant water supply, together with a direct connection with the waste pipe; but where this is not possible, it is easy to make such arrangements as will prove highly satisfactory and convenient.

The developing table should have an opening of sufficient size to permit of the placing of an ordinary pail through it in such a manner as to bring its top flush with that of the table, and a support underneath to hold it there.

Over the top of the pail should be placed a wooden grating, with openings between the strips of about a quarter of an inch. This should be fastened securely in place to prevent any such mishap as letting your plate take a header into the dirty water below, and yet be easy to remove when the pail is to be emptied.

In this way the developing tray may be placed directly on the grating and all slopping over be avoided, any liquid which may be spilled running directly into the pail beneath. In a case of this kind it no longer becomes necessary to use one of the household towels as a swab, a circumstance which the towel never forgets, and one which is sometimes productive of discord as well.

As to water supply, it is of course preferable to have a direct connection with the tank, but a very good substitute can be made of another of those pails.

Procure at the hardware store a brass spigot, such as is used for oil barrels; have a rose attached to the end of it and screw it into a hole made for it, as near to the bottom of the pail as possible.

Place the pail so that the rose will occupy a position over one side of the sink and about 3 inches above it. This will prove a convenient height for washing a negative, and will still bring the top of the pail at such a level as will permit of its being easily looked into.

This may seem a paltry consideration, but with a water reservoir mounted high above your head, it is wonderful the amount of utterly unreliable guessing as to how much water you have not got that a man will do.

Now it is unnecessary to explain, to even the beginner, what an unpleasant predicament the sudden giving out of the water supply may put you in. Most of us have experienced it with more or less—usually more—serious results.

If possible, place the lamp outside of your darkroom. It is always an unpleasant neighbor, both hot and odorous, and liable, unless one of the expensive ones, to leak some little white light.

Personally, we prefer a side illumination, as being far pleasanter and less trying to the eyes than the ordinary method of placing the light directly in front of the operator.

A sliding sash, provided with a yellow, a red and a white glass, will be found such a convenience when once used as to render it almost a necessity. The glasses may be placed in a simple grooved frame, and the joints between them closed by pasting a strip of yellow post-office paper on them.

If possible, enter your darkroom by one of those right angle entrances commonly seen in club darkrooms; it will cost less than a door and give you some opportunity for ventilation, which is almost invariably ignored.

For ventilation, a hole cut near the top of the darkroom and made light-tight while preserving the opening, similar to the method employed in the entrance, will be found invaluable. By carrying a small flue up from the lamp chimney in such a manner as to utilize its heat for the purpose of creating a draft, the efficiency of this device may be greatly increased.

If it is unfeasible to provide the entrance mentioned, a light-tight box will be found of great value if made of sufficient size to accommodate the developing tray without being obliged to spill its contents in putting it in.

It often becomes necessary to leave the darkroom while in the midst of developing a picture; in such a case covering it over with a larger tray and a cloth often proves unsatisfactory, and many a fogged negative has in consequence been produced.

Have a shelf for your bottles of developing liquid and graduates; it will often save you from knocking over something which is sure to leave an indelible stain on that good pair of trousers you so foolishly wore; besides it gives you more freedom of motion; you will be less cramped and can consequently do better work.

A consideration of this kind may seem at first sight trivial, but in developing a number of exposures at one time the temptation toward the end of the operation to hurry through is oftentimes irresistible, more especially if the quarters be cramped and uncomfortable; and the invariable result in a case of this kind is an under-developed negative or one fogged from too much forcing.

Aim, therefore, to have your darkroom as comfortable as the circumstances will permit. How many of us have not suffered from a cramped back from having the developing shelf too low?

The continued bending over from watching the process of development becomes very tedious after a short time. To remedy this, place the shelf at such a height as will permit of viewing the plate under development without stooping over. If you have sufficient room, a high office stool will add greatly to your comfort.

Place your fixing bath over in one corner of the developing shelf, well out of the way. One of the vertically grooved hard rubber ones will be found a luxury well worth indulging in, as it will accommodate a dozen plates at a time, thus enabling you to develop three or four exposures at once without the fear of exceeding the capacity of the fixing bath.

An additional one of these filled with water will suffice to hold the fixed negatives while developing the others, avoiding the necessity of going to the sink, where you will probably give them their final washing, more than once.

A hole cut in the developing shelf of such dimensions as to permit of sinking these two trays flush with the shelf, still further lessens the liability of knocking anything over.

Have the walls of the room fitted up with shelves capable of holding all your plates, trays, printing frames, etc. A place for everything, and everything in its place, is a motto which can nowhere be applied to better advantage than about a darkroom.

EDITORIAL NOTES.

A MEASURE is proposed before the Italian Parliament which, if carried out, will serve to strike a severe blow at the educational value of the famous masterpieces of art in that country. The purport of the proposed measure is, that the Government impose a tax on the photographic reproduction of every object which is in an enclosed or covered space and is the property of the State. If the measure should prevail it would practically prohibit publishers from using this vast storehouse of art treasures entirely.

It is understood that the State of Michigan is making arrangements to produce a very extensive exhibit of photographic work at the World's Fair, which will embrace most of the examples of public buildings of the State—churches, colleges, prisons, school-houses, etc., as well as a large collection of its prominent men. The State industries will also come in for a prominent display.

WE are in receipt, from L. C. Schwerdtfeger of Lincoln, Ill., of a typical Western view in the shape of a donkey cart and pair of urchins, made with a hand-camera of the folding type. The technical points of excellence are many and the picture, as a composition, very pleasing.

IN an article on microscopic photography, by Professor Georgio Roster, in the "Bulletin of the Italian Photographic Society," the writer intimates that with an exposure of a fortieth or a fiftieth of a second, he has secured excellent negatives by sunlight, having an amplification of from 180 to 200 diameters, and states that Professor Capranica has, with an exposure of one fiftieth of a second, secured an excellent result, with an enlargement of 1,100 diameters. It is essential in such work that the object be well in the optical center of the field, and also that in watching and focusing, the light should not be so intense as to carry with it any great amount of heat. A second lens or finder is advocated, so that the object may be watched and the exposure made simultaneously.

PHOTOGRAPHY seems not to be without its element of excitement, as a Tyrolese operator found on developing a plate which he had exposed on a group of tourists who stood against a background of heavy woods. To the astonishment of all, the photographer included, the negative showed a large bear disappearing into the forest, whose presence had not been suspected.

THE California Camera Club has just offered a series of prizes for the best work in out-of-door photography, the competition being open to its members only, and a special outing having been arranged for the occasion. The Club is also busy preparing slides for its forthcoming pay exhibition.

WE note from *The Eye* that photographers with hand-cameras will be admitted to the World's Fair under certain restrictions, and that the fee will probably be about \$2. The Fair Company is putting up its own building and will be its own photographer.

IT is reported that an Eastern photographer has discovered a means of photographing a person after death in such a way that the eyes retain their natural and lifelike expression, and the features retain the appearance of life. We can hardly appreciate how this can be possible, except to a blind man.

THE officers elected by the Ohio Photographers' Association for the coming year are: President, J. S. Schneider, of Columbus; First Vice-President, L. H. Hurne, of Lima; Second Vice-President, Wm. Hollinger, Dayton; Secretary, L. C. Overpeck, Hamilton; Treasurer, J. C. Haring, Massilon. The selection of the next place of meeting was left to the Executive Committee.

DR. H. G. PIFFARD has done much to simplify the drawing of photo-micrographic objects, by means of his application of the prism to the microscope. His method is to insert a right angle prism by means of a short tube in the place of the eye-piece of the microscope, and on one of the square faces of the prism another short tube to hold the ocular. The object then having been placed upon the stage and focused, a piece of plain drawing paper is placed under the ocular and the room darkened, when a brilliant image will be apparent on the drawing paper. It is evident that in this way the artist has the advantage of perfect freedom both of his eyes and hands in his work, and can trace the minutest detail with ease and accuracy.

THE Minneapolis Camera Club has been merged into the Hiawatha Camera Club, and under the latter name is prospering finely, having a membership of sixty active workers. The series of outings lately inaugurated have been extremely successful. A competitive exhibition of prints, to include landscapes, interiors, portraits and transparencies, has been arranged to take place at an early date, and a gold and silver medal will be awarded for the best and second best collection in each class. Additional prizes will be given for the best print in silver, platinotype and bromide.

THE professional photographers of Oskosh, Wis., have entered into an agreement that all members of the Photographers' Union in that city will close their studios to sitters on each Monday, for the entire day, with the object of obtaining one day of rest to themselves each week. We believe the idea is one which could be advantageously followed elsewhere as well.

THE Columbus (Ohio) Camera Club is happy in the possession of its new quarters, and increased activity and interest has been manifested of late in the club work. The rooms are in the new building of the Y. M. C. A., and consist of reception room, 20 x 25 feet, with large skylight, library well stocked with photographic literature, enlarging-room, operating-room, darkroom, printing-room and bromide-room, all of which are commodious and most conveniently fitted up for the purposes to which they are devoted. The apparatus is varied, complete and of the best quality. The club extends a hearty invitation to all interested to inspect their rooms.

MICA seems to be growing in favor on the other side of the water as a photographic necessity, there being now established at Breslau a manufactory of mica plates. It is said to serve admirably for carbon prints and Woodbury reliefs, as well as a basis for gelatine bromide films.

A DEVELOPER, recommended by Mr. J. Miller, before one of the London societies at a recent meeting, is as follows :

No. 1.

| | |
|--|-------------|
| Sulphite of soda | 300 grains. |
| Citric acid | 20 " |
| Pyro | 100 " |
| Water (distilled, rain or boiled)..... | 16 ounces. |

Each to be dissolved and combined in the order given.

No. 2.

| | |
|----------------------------|------------|
| Bromide of potassium | 50 grains. |
| Water | 60 ounces. |

No. 3.

| | |
|-----------------------------|------------|
| Liquid ammonia, 0.7880..... | 2 drams. |
| Water..... | 16 ounces. |

For normal exposures take $\frac{1}{2}$ an ounce each of Nos. 1 and 2, and immediately before development add $\frac{1}{2}$ an ounce of No. 3.

For over-exposure use less of No. 3 and more of No. 2, and for under-exposure less of No. 2 and more of No. 3.

When too great contrast exists, reduce the proportion of No. 1.

LETTER FROM GERMANY.

BY DR. H. W. VOGEL.

The Red Lantern on Photographic Trips.—Color-Sensitive Films.—Argentotype Paper.—The Decline of Professional Photography.—Photography on Wood.

MANY complaints are made to me by amateurs about the defective dark-room light at the disposal of amateurs in the photographic darkrooms of hotels in Switzerland. They are either too dark, making it extremely difficult to control the development; or too light, causing the plates to fog easily. If regular windows covered with red glass are employed, these defects are still more evident. On bright, clear days it is so light that, even then, when the window admits only red light, the judgment of the operator about the density of the negative is led astray. In the photographic laboratory of the Royal Technical High School we employ for this reason only lamplight, which can easily be regulated. Hotels may consider this as too expensive, and, therefore, prefer daylight. They are also not sufficiently careful in the selection of the red glass. Three years ago I made known that of twenty darkroom lanterns tested by me, not one had red glass actually fit to use. They all admitted the passage of green. If that took place in lamplight of only six candle-power, it can easily be imagined that in daylight of a hundred to a thousand times greater strength this defect will appear to a much higher degree, so that a fogging of the plates is almost unavoidable. Many tourists carry, therefore, their own dark-room lamps. But the red chimneys of these are very seldom good, and very frequently some of them will admit on one side red light and on the other red and green. In such cases the chimney should be so turned that the thin side is removed from the negative.

Everybody does not develop while traveling. I, for my part, never do it. After reaching my quarters, more or less tired, I do not feel inclined to proceed with the development at night, particularly in the presence of a probably very disagreeable neighbor. I am satisfied with the changing of plates or films. For this the dwelling-room is good enough at night, except in a very bright southern climate. It is the belief that, for the changing of dry plates, a red lamp is absolutely necessary. To this I would remark that when traveling in our latitudes I never use a red light, although I work always with color-sensitive plates or films, that is, such that are particularly sensitive to green light. Necessity led to the following idea once when my red chimney got broken: In one corner of the room I placed a lighted candle on the floor, covered by an umbrella resting on two chairs in such a way that it kept off the light from the white-reflecting ceiling. The plateholders and boxes containing the plates were placed on a table at a distance of about 12 feet (the top of the table being higher than the candle), and now, in a very subdued white light, the operation was performed. The plates were taken from the holders and put in a safety-box, and the empty plate-holders were filled again with new plates. Not one of the plates changed in this way ever fogged. It can also be done with an empty wardrobe, in which the candle is placed, the door being just sufficiently left open to give a glimmer of light. The principal thing is to keep the white ceiling, walls and furniture well shaded.

Even films I put in in daylight in the Stegmann changing film-holder. I cut the outside wrapper of the package containing the films with a penknife

carefully on the edges, put it into the changing-bag with the holder, removed the wrappers and put the dozen films into the holder. By a touch of the film I could easily distinguish the emulsion side from the plain one. The operation had to be performed very rapidly, of course, and in the darkest corner of the room.

From the foregoing you will see that in Germany a great many cut films are made besides the roll films, which are mostly imported. The cut films are manufactured mostly by Schleussner in Frankfort, and Perutz in Munich. The latter is the only one who furnishes color-sensitive (orthochromatic) films. That they find no more general application is a mystery to me. The limited knowledge about the same is surprising to me. Thus I find in the *American Amateur Photographer* an extensive article about landscape photography with orthochromatic plates, that color screens are still recommended. The author does not know, therefore, that we have orthochromatic plates which require no color screen—those manufactured by Perutz in Munich, and E. & H. T. Anthony & Co., New York. For five years I have worked with these plates without the use of a color screen for landscapes, having recourse to screens only for paintings in color.

One of the latest novelties in Germany is the Argentotype paper. Under this name I received from Mr. Kuhn, of this place, a number of sheets 13 x 18 c.m., with formula. The most interesting thing is that the paper requires only printing until the details become faintly visible, to be then developed simply in water.

The formula says to apply hot vapors, or place the half-printed paper upon water on the reversed side; the water should not be allowed to touch the face side.

The latter operation will not always succeed. The moistened face in parts developed, indeed, much quicker, and I preferred, therefore, to immerse the paper entirely, obtaining very satisfactory results. I used a number of negatives of different density, which I printed for ten minutes in good afternoon light. Those distinctly printed developed excellently in water. The water assumed a brown coloration. The weaker ones did not appear sufficiently. In the fixing bath the pictures took a reddish color, but toned pretty rapidly in the tone and fixing bath (thirty seconds). The tone was very agreeable. The properties of the paper remind one of dry plates, which were placed on the market five years ago and were developed with water. Those plates were coated upon the reversed side with a pretty durable developer containing rubber, which dissolved when placed in the water and began its work.

Now paper seems to have taken their place. The composition of the sensitive side of the paper and the developer is not known to me.

The plates which could be developed in water had only a short existence. It was proved pretty soon that the developer on the reversed side of the plate soon oxidized, on account of the large surface, and then became inactive. Whether this is different with paper time only will tell.

In the *British Journal of Photography* of August 5th I find an article entitled "The Decay of Professional Photography." The contents of this article are almost synonymous with a letter received by me from Herr Paar. The evil seems, therefore, to be a general one, and deserves the greatest attention. Herr Paar writes:

"The relation of any class of society to the book trade is the surest educational test." This is the expression of a man of celebrity. Education is indeed

transposed knowledge, and knowledge has to be acquired, must be learned. The book trade now is the mediator between the majority needing instruction and the single members of society having instructive capacity, whose liberated products of intellect are offered to the former. Teaching and learning was in former times the privilege of a few; to-day they are the common property of everybody, and still how few make use of the latter! Without the book trade no education, no progressive culture. The conclusion is, that the more intimate the intercourse of a certain class of people is with the book trade, the higher must be the degree of education. The contrary conclusion would consequently be that the more deficient the intercourse of another class is with the book trade, the more deficient must be the educational degree of this same class, and that it is high time for this part of society to remove the evil. What class of society is in this condition? One of the most prominent merchants in the book trade gives us the necessary information. Listen!

"The professional photographic circles are not very generous buyers of photographic literature, and if it was not for the amateur photographers it would be impossible to do business in that line."

This is a judgment, just as annihilating as short, which has been passed by that gentleman during a correspondence with me, and his professional standing is sufficient guaranty for the correctness of his assertion. Unfortunately, it is not very flattering to belong to a class of society about which sentence is pronounced in such a way. The deficient demand for photo-literary products is by no means a final proof of the deficiency of a requirement for intellectual products. Well, there is hope then; let us stick to it like the drowning person to a straw; may it never prove to be treacherous. I, for my part, will not put my foot in the bottom of such a frail craft.

What, now, is the cause of this evil? That it exists, this prime defect of our elementary education, we cannot help. But that it remains in evidence and will never make way even in later years, that is our fault and the reason is to be found in everything.

Professional papers and institutions, unions of employers and employees rival in the endeavor to finish the roof of a building, whose foundation is wanting, and some even take pains to carry away some of the building stone, collected without selfishness by the more meritorious.

Therefore, you gentlemen of the pen, look for the good where you can find it and help to distribute it; the bad may pass away without your help. Try your best to induce people to read and learn, but do not attempt to extinguish it. Knowledge of the situation will be a natural result of reading and learning. An energetic perseverance is of course a necessary requirement.

Take, for instance, the province of Silesia, and here is an inevitable fact, that 80 per cent. of the subscribers of a photographic paper lay the same aside unread, while of the other 20 per cent. one half read nothing but the advertisements. The proportion would probably be a more favorable one if I had found better opportunity for collecting information in amateur circles. I was restricted mostly to professional photographers.

Again I ask, what is the reason? Simply because our photographers do not care about learning anything to increase their knowledge. They abuse the amateurs whose number increases daily and do not consider that, if they gain superiority, the reason is only in their greater education and intelligence.

Only with education and intelligence can they meet the increasing competition of the amateurs.

At a meeting held some time ago about photography and printing processes, there was only one photographer in an audience of 500, and he said "Yes! Yes! My colleagues know already too much." The same has taken place at meetings in other cities. Only in the United States I had in that respect good success, and had always a full house in spite of my bad English; and I may pronounce with safety, that the acquisition of intelligence and learning is there more popular than in the old world.

Mr. Lainer, in Vienna, has published lately a very useful method to transfer photographic pictures upon wood for woodcuts.

The wood block, before transferring the picture, requires a ground, for which white lead or zinc white together with a gelatine solution or albumen are used.

The grounding in the silver printing processes may be replaced by a chloride. Some prefer to prepare the ground first with salted albumen, and to sensitize it after drying with a neutral or acid nitrate of silver solution.

In the latter case three operations would, therefore, still be required before printing, besides filling the pores of the wood with paraffin, or a shellac solution. I tried to unite the three with one by mixing the mass for the ground as well as the salt solution and the nitrate of silver to a kind of emulsion, and then coating the wood block with this mixture, and equalizing it.

This emulsion is composed as follows :

| | |
|--------------------------|--------------|
| Gelatine..... | 1-0.6 grams. |
| Chloride of ammonia..... | 0.6 " |
| Zinc white..... | 30 " |
| Nitrate of silver..... | 10 " |
| Citric acid..... | 3-4 " |
| Water..... | 100 c.c. |

For the practical execution of the process, it is best to make the following stock solutions.

| | | | |
|------------------------------|-----------|------------|------------|
| I. Gelatine..... | 1 gram. | Water..... | 30-50 c.c. |
| II. Chloride of ammonia..... | 10 grams. | " | 100 " |
| III. Nitrate of silver..... | 10 " | " | 50 " |
| IV. Citric acid..... | 30 " | " | 60 " |

The single ingredients are put into a mortar and mixed in the following rotation :

| | |
|--------------------------|----------|
| Gelatine solution I..... | 5 c.c. |
| Solution II..... | 1 " |
| Zinc white..... | 8 grams. |
| Solution III..... | 5 c.c. |
| Solution IV..... | 3 " |

Solution III is gradually added. Immediately before coating with the mixture add 1 c.c. of hot water under constant and quick rubbing.

The coating is done with a soft brush, about 3 to 4 cm. wide. The brush is steeped into the mixture, the surplus taken off the brush by striking it against the edge, and the mass is then put upon the block in parallel layers; whereupon it is then brushed over in a vertical direction. The thin coating is now equalized with a long badger-hair brush, about 7 cm. wide. The coating

can be made so thin after this process that even the yearly circles in the wood are distinctly visible.

The wood blocks so prepared dry in a very short time.

The printing is done from a reversed negative, and, according to its condition, in either diffused light (about 15 to 60 minutes), or in direct sunlight (5 to 15 minutes).

The print so obtained is washed with a concentrated fixing solution. Mixed toning and fixing baths can also be used. After fixing, the picture surface is washed, flowed with a concentrated chrome-alum solution, washed again and dried.

The delicate picture film can now be flowed with a benzine gutta-percha solution, or with a thin rubber solution; the extremely thin rubber film protects the picture from being spoiled.

The character of the prepared pictures depends upon the negative, and looks like a pencil drawing in thin negatives, and an india-ink picture when the negative is very dense.

Intensifying a fixed picture with a mercury solution and ammonia, I obtained red-brown tones.

BERLIN, August, 1892.

"WET" OR "DRY" LANTERN SLIDES.

BY "AN OUTSIDER."

It is a pity that Abe Lizzard did not have an opportunity to attend the next to the last session of the Photographic Section of the American Institute. We had an assortment of slides, both old and new. All were of good quality, most were fine, and a few were of a superlative degree. They were upon all sorts of plates. Some were old-fashioned wet-plate slides, others were upon gelatine dry plates. There were special plates and plates that were not special. The original negatives were quite as dissimilar in their method of production as the slides themselves. They were a picked lot from Professor Elmendorf's collection. Each had its history, with the details of the process, as far as was necessary. Professor Newton, Doctor Mason, and several other experts were present, as well as several gentlemen who had a "bias."

There was a good share of fun for the outsiders, but those who thought they knew all about slides had a hard time. The performance would be something after this pattern. Professor Elmendorf would take up a slide, glance at the notes, and then ask as the picture came out on the screen: "How do you think this slide was made?" Then there would be a pause, and the experts would carefully consider the quality of the picture. After a pause, someone having the courage of his convictions, and seeing what he considered a perfect slide, would call out: "That's a wet plate." Then the professor would blandly inform him that it was on a dry plate and made from a dry-plate negative. But this was probably an accident, and so when the next superb slide was shown the wet-plate voices replied strongly, and again they were informed that the slide was made on a commercial gelatine dry plate. The laugh, of course, was slightly sarcastic, and a little later Doctor Mason guessed "dry" on a slide that seemed to have the characteristic strong qualities of the dry plate. But the Doctor was immediately informed that the slide was made on a wet plate from a wet-plate

negative. Then there was a slight variation, and we were told this negative was on a wet plate and were asked to guess at the slide. Professor Newton promptly guessed wrong, and so did several others when slides from dry-plate negatives were shown. It was a circus in a quiet way for the outsiders who didn't know and didn't care. We didn't know enough to guess, but we could see that the shining lights were not making bull's eyes.

Then, after nobody had guessed right, and no one cared to guess again, the Professor opened a new style of fun. He would show two slides of the same subject, one after the other, and ask which was the wet and which was the dry? Well, that was awfully fair, and they all fell into the trap. They asked to have the first slide put back on the screen, and the Professor kindly did so, and then threw half of each on the screen at the same time. They were sound, hard-shell fellows, who still thought they knew a thing or two, and they guessed—and guessed wrong. By this time we outsiders began to see something. We were getting a glimpse of facts, and were much amused.

Toward the middle of the evening all method was gone in the guessing. There were some that kept at it, hoping to hit by accident. At last it stopped altogether. Those that had eyes could see that there was no means of knowing, and those who were prejudiced found that luck was against them. The outsiders had all the fun, always excepting Mr. Newton and Dr. Mason, who were "wid us" when the laugh came in.

The conclusion was easily reached: There were in the collection very many well-nigh perfect slides made by both processes. There were equally perfect slides from both wet and dry negatives. Probably the most superb of all was from a negative on a dry plate, which appeared to be absolutely without grain.

To talk as Abe Lizzard does in regard to the possible qualities of dry-plate negatives and dry-plate slides is remarkably amusing to one who has had such an illustration of the powers of the two processes as we have described. Had he been present, his ideas would have had a modesty imparted to them which would have lasted the remainder of his life. At least he would have been taught that it's best to know how a slide is made before guessing at the process.

Perhaps, however, our friend with the breezy name is like a certain well-known Brooklyn amateur, who upon one occasion was much pleased with a slide until he found it had been made with pyro. Thereupon he informed the maker that the sky was stained. The strange thing was that no one could see the stain, nor could it be found on the screen when the slide was put in the lantern and the picture thrown on the screen.

Well, some eyes see "as they are bid, it was their duty, and they did." Facts are stubborn things, as they say, but fancies are a great deal funnier, even when they pass for facts.

TO MAKE PAPER ADHERE TO METALS.—Gum tragacanth, 30 grams; acacia gum, 120 grams; water, 500 c.c. Dissolve, filter and add $2\frac{1}{2}$ grams of thymol suspended in 120 c.c. of glycerin; then add enough water to make up the bulk to 1 liter. Can be used for metal, glass or wood. For fastening labels to tin surfaces, where they are exposed to moisture, there is nothing superior to egg albumen. The albumen is mixed with equal parts of water, or two parts of the latter may be used to one of the former, and the mixture used as ordinary mucilage. When it is dry, however, a hot iron is carried quickly over the surface of the label, by which means the albumen is altered so as to become insoluble in water.—*Revue Photographique*.

[From *Philosophical Magazine*.]

DISRUPTION OF THE SILVER HALOID MOLECULE BY MECHANICAL FORCE.

BY M. CAREY LEA.

In a paper published about a year ago on the subject of Allotropic Silver, there was included an investigation into the action of the different forms of energy upon silver chloride and bromide.* It was there shown that these substances possessed an equilibrium so singularly balanced as to be affected by the slightest action of any form of energy. Such action produced a change which, though it might be wholly invisible, yet caused the breaking up of the haloid when subsequently placed in contact with a reducing agent. The forms of energy with which this effect was observed are :

- 1st. Heat.
- 2d. Light.
- 3d. Mechanical force.
- 4th. Electricity (high tension spark).
- 5th. Chemism.

It follows, therefore, that it is not light only that is capable of producing an invisible image, but that this power belongs alike to all forms of energy. So that a slight impulse from any one of the forces just mentioned brings about a change in the equilibrium of such a nature that the molecule is more easily broken up by a reducing agent.

As respects four out of these five forms of energy, it was further shown that when made to act more strongly, they were able of themselves to disrupt the molecule without external aid. One form alone of energy—mechanical force—made an apparent exception to this general rule. The other four, when applied to a moderate extent, produced a latent image ; applied more strongly, they broke up the molecule.

The object of the present paper is to prove that this exception does not exist, and that as all forms of energy have been shown in the previous papers of this series to be capable of impressing an invisible image, so, also, with stronger manifestations, any form of energy is capable of disrupting the molecule.

I was able to show many years ago that mechanical force could produce a latent image. Lines drawn with a glass rod on a sensitive surface could be rendered visible by development in the same way as impressions of light. An embossed card pressed on a sensitive film left an invisible image, which could be brought out by a reducing agent. The raised portions of the embossed work exerted a stronger pressure on the sensitive film than the rest of the card, and these portions darkened when acted upon by a reducing agent. In the same way, the lines traced with a glass rod blackened under a developer. In each case, it was the portions which had been subjected to pressure which yielded first to the reducer. It was therefore clear that in the molecules which had received this slight pressure the affinities of the atoms had been loosened.

To bring these phenomena fully into line with the others, it is now necessary to prove that an increased pressure can take the place of a reducing agent, and disrupt the molecule. And this is actually the case.

It was found that the breaking up could be produced in two ways—by simple pressure and by shearing stress. Silver chloride and bromide formed and washed in absence of active light were subjected to these agencies.

I. SIMPLE PRESSURE.

In the first trial made with silver chloride it was enclosed in asbestos paper, which had been first ignited with a blast lamp to remove all traces of organic matter present. This method was tried in order that the chloride should be in contact with perfectly inactive material only, but it was not found to answer. The great pressure employed

* *Philosophical Magazine*, April, 1891, p. 320.

forced the dry chloride into the pores of the paper, cementing it together, so that the opposite sides could not be separated. Platinum foil was then substituted with satisfactory results. With a pressure of about one hundred thousand pounds to the square inch, maintained for twenty-four hours, the chloride was completely blackened, except at the edges, where, owing to greater thinness, the pressure was less. Very bright foil was used in order to detect the slightest discoloration that might occur, but none resulted; it was impossible to distinguish the portions which had been in contact with the darkened chloride from those that had not. The chloride did not assume the usual chocolate color, but changed to a deep greenish black.

Silver bromide gave exactly the same results. It should be mentioned that the silver chloride and bromide were each precipitated with an excess of the corresponding acid.

As silver iodide precipitated with excess of potassium iodide is not darkened by light, it seemed improbable that it should be by pressure. The experiment was, however, tried, and it was found that the iodide darkened fully to the same extent as the others. This result surprised me so much that the experiment was repeated with every possible precaution. The result left no doubt that silver iodide, as well as the chloride and bromide, is blackened by great pressure. All three silver haloids take on the same coloration—an intense greenish black. It was found best to use the material air-dried. If at all moist, the platinum foil bursts under the pressure and the experiment is invalidated. The air-dried salt retains a sufficient quantity of moisture.

2. SHEARING STRESS.

As a means of applying this form of force, the silver chloride, precipitated with excess of hydrochloric acid and well washed, was put into a porcelain mortar and well triturated. The improbability that the small quantity of force that can be applied in this way would break up a stable molecule like that of silver chloride seemed so great that at first a substance tending to aid the reaction was added. Tannin was selected, and when forcibly ground up with silver chloride, the latter was soon darkened. Next, a substance capable of taking up acid, but having no reducing action, was tried. Sodium carbonate was used. This also caused the chloride to darken. Finally, it was determined to ascertain if the molecule of silver chloride could not be disrupted by stress alone. The chloride was placed in a chemically clean porcelain mortar and well triturated. For some time no effect was visible. After about ten minutes' action dark streaks began to appear, and after five minutes' more work a considerable portion of the chloride was darkened. The end of the pestle was covered with a shining purple varnish. It had not become perceptibly warmer to the touch. On the violet-purple substance nitric acid had no action, but aqua regia slowly whitened it. It was therefore what I have proposed to call silver photo-chloride, that is, a molecular combination of chloride and hemi-chloride. This experiment was carefully repeated with the same result. Silver bromide similarly treated gave a similar result. It was noticed that both chloride and bromide, in darkening, took on the familiar color between chocolate and purple, so generally seen in the darkening of these silver salts, and differing strikingly from the greenish-black color assumed by all three silver haloids under simple pressure.

The fact that the platinum foil remained absolutely unattacked when the silver haloid was reduced by simple pressure in actual contact with it is interesting, and would seem to show that in the reduction of the silver haloid the halogen is not at any time set free; but that water, if present, is decomposed at the same moment, with formation of halogen acid.

The observations recorded in this paper prove the existence of a perfect uniformity in the action of all kinds of energy on the silver haloids. The balance of the molecule is at once affected by the action of any form of energy. A slight application produces an effect which, though invisible to the eye, is instantly made evident by the applica-

tion of a reducing agent. The bonds which unite the atoms have evidently been in some way loosened, so that these molecules break up more easily than those to which energy has not been applied. Consequently, if the substance is submitted to the action of light, heat or electricity, or if lines are drawn by a glass rod (shearing stress), or with sulphuric acid (chemism), a reducing agent blackens the parts so treated before it affects the parts not so treated. This justifies the statement made earlier in this paper, that the phenomena of the latent image and of its development are not exclusively, or even especially, connected with light, as hitherto supposed, but belong to all other forms of energy as well.

EVERY FORM OF ENERGY DISRUPTS THE SILVER MOLECULE.

It is therefore true that every form of energy is not only capable of producing an invisible image (that is, of loosening the bonds which unite the atoms), but is also capable, if applied more strongly, of totally disrupting the molecule. This law, in a general form, was proved in previous papers with but a single exception, and that one exception is removed by the observations recorded in this paper.

As far as observation has gone, silver compounds are the only ones that exhibit this universal sensitiveness. Of other substances some are decomposed by heat, some by electricity or by chemical action, and a few by light.

It has now been shown, as I believe for the first time, that mechanical force is competent, without the aid of heat, to break up a molecule that owes its existence to an exothermic reaction.

It is important to distinguish between the two treatments here described. In the case of shearing-stress, force is expended in overcoming friction, and in so doing produces heat. It may be questioned, however, whether the very small amount of heat thus generated has anything to do with the reaction. The heat is not perceptible, it is momentary; and it has been elsewhere shown that though moist silver chloride can be broken up by heat, the action is slow even at a temperature of 100 degrees C.

In the case of simple pressure, heat certainly plays no part. The material is small in quantity, is folded up in metal, is placed between large and heavy pieces of metal, and the pressure is applied gradually by means of a screw. Even supposing a slight increase of temperature, it could not exceed one or two degrees and would be momentary. As just remarked, heat does not produce an effect except at about 100 degrees C. and after many hours.

The powerful affinity which exists between silver and the halogens is well known. That this affinity can be counteracted and annulled by simple pressure—that the halogen can in part be forced out of the molecule by mechanical means unaided by heat—is remarkable.

It need scarcely be said that this phenomenon has nothing in common with decompositions produced by mechanical force in substances such as silver or mercury fulminate, nitrogen chloride, and similar explosives. Such substances are all formed by endothermic reactions, and their decompositions are exothermic. Heat does not need to be supplied, but only what Berthelot has named a *travail préliminaire*, an impulse to start the reaction. But silver haloids are formed by exothermic reactions; consequently, their decompositions are endothermic, and require that the energy which was disengaged in their formation should be returned to effect their decomposition. The experiments described in this paper show that mechanical force may be made to supply this energy, and so play the part of light, electricity, or heat, without previous conversion into any other form of energy.

The thermochemical reactions of the silver haloids have been studied by Berthelot, and their reductions were found to be endothermic. There can be no doubt, therefore, that an endothermic reaction can be brought about by simple pressure.

All communications for the columns of the BULLETIN should reach us on Monday preceding the day of issue, to insure their publication at that time.

PHOTOGRAPHY BY RULE.

[North Middlesex Photographic Society.]

BY THOMAS BEDDING.

A RETROSPECT.

TEN or twelve years ago, when the gelatine dry plate had finally conquered the prejudices of professional photographers and the ranks of amateurs were being swollen by the accession of many to whom wet-plate photography was unknown except by name, it was often charged against photographers of both classes that their work was largely governed by "rule of thumb"—in other words, that in exposure and development, probably the two most important divisions of photography, success was allowed to depend very much upon pure guesswork, in contradistinction to system and calculation. Those were the days when the rapidity of the plate was generally underestimated; when a frequent if not common method of compounding the developing solution was by shaking an unknown number of grains of dry pyrogallic into an unmeasured quantity of water, and, after soaking the plate in it, adding thereto an undetermined number of drops of ammonia. For rapid exposures, a simple drop shutter, whose rapidity of action could easily be accelerated, but was rarely if ever reduced to arithmetical expression, was mostly used; and albumen paper held practically undisputed sway for contact printing. These broad outlines of early gelatine dry-plate photography may, perhaps, serve to convey some idea of the chief conditions of working which obtained at that period—conditions under which, be it remembered, amateurs as well as professionals pursued photography.

It is, I am sure, needless for me to indicate precisely to what extent those conditions have been changed or modified; for you are all aware that development has been lifted from the low ground of a "rule-of-thumb" operation to the level of a scientific study; the comparative and particular speeds of sensitive preparations have been made the objects of close investigation and valuable experiments; and mechanical aids to exposure have called an apparently inexhaustible supply of inventive ingenuity into existence—the main and indeed the sole object underlying all those efforts being not merely the simplification of exposure and development, but their reference to pure rule and system. I propose briefly on the present occasion to consider some of the tendencies of modern photography—chiefly amateur photography—for which the application of this scientific method to several of its branches is responsible, and to submit a few reflections of a deductive character thereon.

RULE OF THUMB.

Before dealing with that part of my subject, however, I wish to submit that the bad old "rule-of-thumb" days of gelatine dry-plate photography do not expose a very broad target for the arrows of our reproaches. Point for point, and excluding from consideration the well-directed, but unconvincing, productions of the new diffusion-of-focus school, a comparison of amateur and professional photographic work of twelve years ago with that of to-day reveals little, if anything, in favor of the latter. The portraiture of professional photographers is possibly, on the whole, more instinct than formerly with artistic feeling and treatment; but that is not a matter upon which I wish now to descant. It is from a technical standpoint alone that I desire to make the comparison. My own observations lead me to think that, technically speaking, in qualities of negatives and prints, the professional work of to-day is practically what it was a dozen years ago, taking it at both its best and its worst. The negatives of the former period were, perhaps, not so pretty and clean to look at as those produced nowadays; but will anybody undertake to say that the resulting prints exhibit any traces of inferiority to those of the present time—that the negatives were not so well exposed, or that the prints were inferior in point of careful printing, uniformity, and depth of tone? The same question stands for all other kinds of professional work—

always remembering that I wish it to have a technical bearing and no other. It is, of course, not so easy to make a comparison of amateur work, because, in the times I am referring to, exhibitions were few and far between; but recalling the pictures shown at Pall Mall and elsewhere at that period, and contrasting them with those of to-day—a mental process in which, no doubt, most of you can accompany me—I fail to perceive that any distinction is to be made. Technically speaking, the work shown then was quite the equal of that shown now, and probably the average of quality was higher.

I have roughly traced the conditions under which photographers—amateur and professional, new and old—formerly had to work. Recollect also that failures were more frequent then than now. Dry plate-making was in its tentative stage, and, consequently, to the difficulties of exposure and development a large number of troubles incidental to the preparation of the film—such as are not often experienced nowadays—had to be habitually encountered. Those were the times of constant frilling, of red and green fog, and of numerous mechanical imperfections in the films; and the percentage of failures was, consequently, high. Yet, notwithstanding these obstacles and drawbacks; notwithstanding unscientific rule-of-thumb methods of exposure and development; notwithstanding a condition of knowledge of applied photography such as many to-day might be inclined, with their superior advantages, to stigmatize as ignorance, we have not, I submit, made any technical advances on the productions of that time. Tastes and fashions have changed in respect of new developers, printing surfaces, etc.; but a change does not necessarily lead to an improvement in intrinsic quality.

A PLEA FOR TECHNICAL EXCELLENCE.

Do not, however, suppose that I am not alive to the economical advantages of the improved developers with which we are working; of film photography, of the value of orthochromatic plates for certain classes of work, and of the remarkable cleverness displayed in countless shutters, hand cameras, etc. Each of these has its uses according to individual idiosyncrasies; but, if I am correct in my suggestion that, in technique, photography stands to-day where it stood at the commencement of the last decade, their introduction was not called for by necessity, and their existence is not essential, and has hardly been justified by results. I am unable to understand that they have improved the technique of photography. Technically good photographs, I venture to think, are not so prevalent that we can afford to regard them with the contempt bred by familiarity. At a moment when the art aspects and attributes of photography occupy so much attention, perhaps a technical excellence may not be misplaced. While I have, I hope, as keen an appreciation as any one not an artist of what is artistic in photography, I am equally ready, and I trust capable, of appreciating what is technically good in any photograph, whether it makes pretension to being a work of art or not. Definition, however finely rendered, appeals to my sense of the fitness of things in the contemplation of photographs of architectural subjects, and I am unregenerate enough to prefer it to fuzziness in landscape work, with or without figures. Definition, or sharpness to a refined degree, is in practice not so easily or invariably obtained; a photograph is not so frequently taken from the correct or the most favorable point of view; distortion and other optical imperfections are not so often absent as the critical might desire; the negative is not always so carefully exposed and developed as to secure all the detail and the gradations of the subject; the printing process chosen does not so often do credit to the discrimination or the selective faculties of the photographer; and the resulting print does not so often embody the essentials of what a good print should be, that we can afford to treat excellence of technique with indifference when we meet with it. A perfect photograph of even the most commonplace object is, I consider, a tribute to the skill of the photographer, and from a technical point of view is just as calculated to evoke the admiration and the

approval of photo-technologists as an art-photograph is that of an art-photographer. A line drawing to scale of a great public building by an architectural draughtsman has certain elements and qualities in it which appeal to the cultivated perceptions of an architect. Your artist may sneer at its "mappiness," but he dare not and cannot impugn its proportional accuracy and its fidelity. On the other hand, when the artist idealizes the same building in his painting, how easy it is for the architect to discover faults of perspective, proportion and drawing! At the Royal Academy there is (or was) a room devoted to architectural drawings, and I believe it is on record that some years ago some such disparity as that which I am hinting at was pointed out and commented upon.

THE FOCUSING SCREEN THE BEST ACTINOGRAPH.

Heretical though it may sound, I do not think that the cause of photographic technique is in the least likely to be advanced by the present disposition, especially among amateur photographers, to base the making of the photograph as much as possible upon rule and system. The rule of thumb and pinch of pyro days of photography are, perhaps, over—thanks, not, I believe, to formulæ-mongers and mechanico-arithmeticians, but to the fruits of experience and experiment. I consider it an unfortunate thing in several respects that there are so many inducements to modern amateur photographers to attempt the acquirement of a sound photographic judgment by other methods than that of simple experience. Let me cite, in point, those so-called aids to exposure: actinographs, actinometers and exposure-meters, as calculated rather to prevent the cultivation of individual judgment than to foster it. You must remember that professional portraitists and landscape workers, and the old-style amateurs, of whom I have already spoken, relied upon experience alone to guide them in their exposures. My own belief is that a man who takes up photography will surmount the difficulties of exposure by the aid of his own brains, or not at all. If he has not brains enough for that, then he is equally incapacitated for mastering the philosophy of exposure-calculators. I am about to examine some of the principles upon which actinometrical or actinographical systems are based, and possibly to draw some conclusions not entirely favorable to them; but, before doing so, there is one exposure-meter which I must exempt from objection. Indeed, I recommend it to each and every one of you. It is, I think, the cheapest and most efficient on the market, does not get out of order, if destroyed may be easily replaced, requires no arithmetical calculations to use, and may be had of all dealers. It has been testimonialized by the most successful photographers throughout the world, and, when once its application is mastered, it seldom leads you astray. With it all the best photographs have been taken, and thus, in regard to medals, it, as our friends at Ilford would say, has secured more than all the rest. It is an exposure-meter which enables the photographer with brains enough to use it to get twelve good negatives from a dozen plates. No photographer should be without it, and no photographer is. Need I say, gentlemen, that I allude to the focusing screen of the camera? It is by the study of the image on the screen, it is by comparing the depth of the shadows, the strength of the half tones, the brilliancy of the high lights, with those of other pictures taken under similar circumstances; it is by studying the visible influence of the lens diaphragms on the brightness of the image; in short, by comparing the exposure about to be given with that previously given under similar or different conditions, as the case may be, that experience was gained in former times. It is theoretically a very unscientific method, of course, but you all know how well it has answered practically. Occasionally it fails; but can you conceive of an infallible actinograph? Besides, it is good that it should fail at times, for what an education in development under and over-exposure provides for the painstaking photographer who is willing, as he should be, to learn from his failures! You may say to me that these last advantages also accrue to the employment of an exposure-meter or an actinograph? Granted; but,

in that case, why use an exposure-meter or an actinograph? An instrument or system of this nature, plus an unerring judgment of those factors in exposure compulsorily left to the estimation of the individual, and which is fallible, seems to me not to possess any point of superiority to the unaided fallible judgment alone. I shall endeavor to show that the probabilities of any instrument or system for indicating correct exposure can scarcely be other than incorrect, to the contrary of which there are practical objections which science is, I believe, powerless to overcome.

NO EXPOSURE FACTORS "CONSTANT."

Mr. Howard Farmer recently pointed out that several important factors are not taken account of in certain systems of calculating exposures; but, even if the omitted factors—such, for example, as color and distance of object—were included, I still submit that theoretical or practical accuracy could not possibly be assured. To the inexperienced or the beginner in photography, for whom, bear in mind, all these aids or guides to exposure are intended, the difficulty of estimating, or, rather, of judging, the actinic value of the light on any day or at any hour, is no inconsiderable one, especially if you reflect that even a photographer of ripe and lengthy experience is occasionally mistaken in his judgment. I have seen it stated that of the three principal factors involved, viz., the light, the speed of the plate, and the aperture of the lens, the two latter are constant. But the ascertained comparative or particular speed of a plate so soon as it leaves the manufacturer's drying-room does not appear to be above suspicion of change. Quite recently, Dr. Vogel, of Berlin, gave instances where commercial plates materially increased in sensitiveness after a month or two's keeping, and the same phenomenon has been claimed to have been observed by several other workers during the last few years. On the other hand, some photographers have concluded from the results of experience that sensitiveness diminishes by keeping. If either of these two theories is correct, the speed of a plate, no matter how it is ascertained, cannot be reasonably accepted as a constant factor in exposure calculations. Again, the argument, in reference to the aperture of the lens, that all lenses are of equal rapidity with a given stop, assumes two conditions which are far from being always realized, namely, that the diameters of the stop openings are accurately expressed in relation to focus, and that all lenses are on an equality as to the amount of light they pass. Optical glass, however, is, I believe, of somewhat varying equality as regards coloration, experiment having proved that even in modern lenses as much as twenty-five per cent. of the light is occasionally obstructed by the coloration of the glass as compared with the glass employed in other objectives. One can easily understand that time superinduces changes in the glass of lenses as well as in the material with which they are cemented so as materially to slow them. Can it, then, be fairly claimed that all or either of the three factors I have referred to are to be accepted as constants in basing calculations upon them? If so, in what manner will you dispense with individual judgment if you admit, as you must, the no less important factors of color and distance of objects to your calculations? I put it, that constancy of any of the factors in exposure calculations is far from being the certainty we are asked to believe.

"FORMULAS."

That exposures calculated according to the systems we are now discussing are sometimes correct, I do not deny; it would be strange were it not so. But an exception does not negative a principle, and it is a principle I am urging, namely, that of buying photographic wisdom by photographic experience. The world's photography has so far been accomplished by the aid of the actinometrical readings of the focusing screen; why, then, should the beginner or student expect to extract from mere empiricism the knowledge which has been shown to result from the reliable, although "unscientific," method of trial and error? The plethora of new developers, the legion of hand cameras and rapid shutters, the numerous exposure systems, seem to me to be the

articulate expression of a wish to compress photograph-taking into a rule-of-three sum, and so to enable one to run without the necessity of having to learn to walk. Do not understand me as advocating rule of thumb; I am merely advocating the exercise of the individual intelligence as opposed to falsely inspired formulas. The word "formulas" here induces me to recommend to you a source of instruction as to the wide range in the differences of opinion which prevail among dry-plate makers and dry-plate users in respect of the proportional constitution of developing formulas. Make a collection of such formula from representative sources, and convert them either into parts per thousand or grains and minims per ounce, and you will assuredly have a most bewildering statement of proportions of accelerator to reducer, and of restrainer to both, together with a lengthy list of ingredients which appear in some formula and not in others, and the exact functions of which many people would find it difficult to define. In the normal developer for A's plates, for example, you may see one and a half grains of pyro, eight of sulphite, and ten of sodium carbonate to the ounce; in B's developer the quantities doubled; in C's, one constituent quadrupled and another halved, while in D's, the inter-proportions suggest nothing so much as the constituents having been selected purely by hap-hazard. The curious part of the matter is, that in all probability A's developer will develop C's plate perfectly, and D's B's, and so on; in short, each or any one of the many developers you analyse, although specifically recommended for one brand of plates, will develop any other brand equally well. So much the better for the users of gelatine plates, you will say, and I endorse the sentiment; but do not overlook the obvious point, and that is, that after all the years during which "scientific development" has been preached, practically the old rule of thumb still survives, and that, on the whole, photography is little the worse for it.

"PHOTOGRAPHY MADE EASY."

The commercially created and fostered tendency among amateur workers to substitute for the mellow judgment of experience and unwearying practice the ephemeral wisdom of the many aids to easy photography which shrewd men of business are always anxious to supply on demand, tends, in my humble opinion, to undermine those valuable characteristics of practice, patience, application, self-reliance and perseverance which have hitherto been recognized as essential to the making of the successful photographer, amateur or professional. Frankly speaking, I look upon it as one of the causes to which we may refer the admittedly low average of quality of modern amateur work. The best amateur work of to-day is undoubtedly as good as, and possibly better than, the work of ten or twelve years ago; but the average strikes me as lower, an opinion which I base on a comparison of the work shown on the walls of exhibitions during that time. Probably the seductive simplicity of the hand camera and the fascinating facility of shutter work have also operated in the same direction.

In conclusion, I renew the plea I have already entered for technical excellence of photographic work, for technical skill in producing it, for technical instinct in appraising it. But that excellence, that skill, and that instinct can only be reached by assiduous cultivation. Believe me, while there are many persons to whom a photograph is only admissible when it appeals to their æsthetic emotions, there are probably a far larger number who, while ready to welcome the artistic effects produced by "diffusion of focus" and low-keyed tones on rough surfaces, have a higher appreciation of the technical qualities previously referred to. Whether or not the cause of technical photographic excellence and progress is likely to be promoted by the attempts now being made to convert photography into an involved arithmetical exercise, and, in fine, what the tendencies of that movement are, is a point for discussion that I have endeavored to lay bare to you in the course of a series of intangible generalizations and impressionistic reflections which, I hope, while blunting the edges of your critical dissecting knives, have not wholly undeserved the attention you have been so good as to bestow upon them.

DEFECTS PRODUCED IN PLATES BY TIME.

BY PROFESSOR W. K. BURTON, *Tokio*.

It is useless for plate-makers to pretend that they never issue plates that are not perfect; yet, on the whole, we incline much more to sympathize with the plate-maker than with the kind of grumbler that is so common, who seems to think that wherever the fault is when he gets an unsatisfactory negative it cannot lie with him. We know a good deal about the troubles that plate-makers have to suffer, and the complaints that they receive, and we do not hesitate to say that, in at least three cases out of four, when a photographer complains of plates, the blame is more of his own than the plate-maker's.

It seems doubtful to us just where the responsibility of the plate-maker should begin and should end. We cannot doubt that where plates are distinctly defective, the plate-maker should take them back, or allow for them, if they have been exposed. Indeed, it is doubtful if his responsibility ends there. If a photographer loses valuable work through the faulty nature of plates supplied by a manufacturer, he could probably sustain an action for damages, as there is certainly an "implied guarantee" that the plates are fit for use.

There are other cases, however, that are more doubtful. It will sometimes happen that a batch of plates will be issued which, with the developer commonly used, incline to give a slight veil, or somewhat thin images, but that work perfectly if a little additional bromide is added to the developer. Or, again, plates may tend to frill, yet be perfectly workable with a little additional care. In such cases, has the photographer the right to discard the plates, and to refuse payment, or to demand new plates? We do not know what the answer would be legally, but we think the photographer is morally bound to humor the plates he buys a little, if humoring only is wanted to get technically perfect results. The burdens of the plate-maker are sufficient without adding to them by complaints that are not absolutely called for.

A question still more difficult is as to the responsibility of the manufacturer for plates that become defective after they have left his hands. At first thought it seems natural to say that if the plates are perfect when they leave the manufacturer's hands, he can be no longer responsible; but we are not at all certain of this. The life of plates is an indefinite thing, and of late years has certainly decreased as the average sensitiveness of commercial plates has increased. We have known plates to become useless within two months after their being made. Now, there must be some point in the want of permanency of plates at which the maker becomes responsible, although it is difficult to say just where it is. One can scarcely say, for example, that the maker is responsible if his plates will keep for three months but not for four.

The question of want of permanence in plates, and of the difficulty of deciding where the responsibility rests when a quantity has become bad was forced on our attention quite recently. We were asked to give an opinion in the case of certain admittedly defective plates as to whether the defects had existed in the plates originally, or whether they were due to time. The circumstances were somewhat peculiar. A wholesale importer purchased a large quantity of plates for a local dealer, but when the plates came to hand, there was some dispute as to payment between the importer and the local dealer, which occupied many months, the plates meantime lying in a warehouse. Eventually, the local dealer took over a small part of the stock and retailed them. He received numerous complaints, reported that the plates were bad, and claimed that they must be returned to the manufacturer. The question then arose as to whether they had been originally bad, or had become bad through long keeping, and, if by long keeping, who was responsible? The maker for having issued plates that would not keep, the importer for having stored the plates too long, or the local dealer for not taking them over sooner? The opinion that we gave was that the defects in the plates

were due to time, and that the makers could not be held responsible. The plates had been stored in a particularly trying climate for more than a year, which is about as long as good plates will keep with any degree of certainty. This leaves the importer and the local dealer to fight it out the best way they can.

It is not always possible, in the case of defective plates, to say, certainly, whether the faults are due to the manufacture or to time, but it is often possible to express an opinion often amounting nearly to a certainty.

There is one form of defect which is always, so far as we know, due to time. This is that well-known iridescent fog showing strongest round the edges of the plates. It shows much more strongly when development is by ammonia than when by an alkaline carbonate. When this shows we may be certain that the plates have suffered from time. It is more difficult to give an opinion when the defect consists of gray or chemical fog, but even then it is often possible.

It is to be observed, in the first place, that there are two different kinds of gray fog. There is one that penetrates the whole film. When this is present it will generally be noticed that by the time development is finished there is a positive image at the back. It is our opinion that this form of fog is always due to original defect in the plates. The other kind of fog is on the surface of the film only. This blackens, but the film as seen through the glass remains white, or shows a negative image. This kind of fog may be due either to original defect or to keeping, but a very fair opinion as to which is the cause may be formed by bearing in mind the fact we have observed, namely, that when this form of fog is due to keeping it is always accompanied by spots that are either quite insensitive or that, at any rate, do not fog like the rest of the film. When the fog is due to original defect, it generally covers the whole of the film quite evenly.

The first-mentioned kind of fog, if only very slight, does not necessarily make it impossible to get good negatives. Indeed, the most rapid kinds of plates are seldom entirely without it. There is no doubt that when this kind of fog is present, even to a slight extent, there is a predisposition for the other to make its appearance.

Apart from the original quality of plates, the manner of packing and other things are undoubtedly great factors in the length of life of the plates. It is well known, for example, that certain kinds of paper in contact with films entirely ruin them. In this case the degree of moisture in the paper, or in the films, or in both, has probably a great deal to do with the length of time that the plates will keep before the paper begins to affect them. Indeed, we believe that moisture has more to do with the destruction of gelatino-bromide plates that are kept a long time than anything else. We believe that if plates and the paper that goes between them, and also that in which they are immediately wrapped, were not merely "dry," in the ordinary sense of the word, but were desiccated, in the chemical sense, the life of the plates would be much longer. Indeed, we imagine that if the desiccation were complete, and the plates were packed in air-tight cases while still absolutely dry, they would keep indefinitely. That the mere packing in air-tight cases without desiccation is not sufficient is a thing that was proved to us some time ago. A number of plates by a well-known maker were offered for sale. It was known that the plates had been excellent when new, and each dozen was within a soldered tin box. This being the case a friend of ours bought the plates, although they were more than two years old. It was found, however, that they were utterly useless, being covered with the surface fog and insensitive spots already described. There can be little doubt that a considerable quantity of moisture had been soldered up in the boxes with the plates. We believe that, apart from absolute chemical desiccation, had the plates and the wrapping material been dried, by placing them on a hot plate just before the plates were wrapped up, and had the boxes been soldered up as soon afterwards as possible, the plates would have been quite good at the end of two, or even of more, years.

[From *Photography*.]

INDIVIDUALITY IN PHOTOGRAPHY.

BY H. P. ROBINSON.

[Read before the Edinburgh Convention.]

IN a recent number of *Blackwood's Magazine*, an ingenious writer tries to show that the one thing more than another that now represents primitive man is the baby, and that the nineteenth century British baby differs very little from the savage child of, let us say, a couple of hundred thousand years ago; for the baby is nearly a quadruped, and is a reckless creature devoid of conscience. It is, perhaps, a knowledge of the fact that babies are all alike that enables photographers, as it is libelously said, to make the negative of one of the species satisfy the yearnings of many mothers. Now, photography is certainly somewhat like this view of the human race in the respect that its immature productions are all alike, and it is not until they grow up and acquire a conscience or soul that they differentiate and show individuality.

Of the immature there is no end; but a wise and invariable provision of Nature checks over-production. Nature is always wise, but has no mercy—

“So careful of the type she seems,
So careless of the single life;”

and, seeing that the world would be overwhelmed by immature photographs, sent beneficent fading to destroy them (always, as in other departments of Nature, “so careful of the type,” sparing a few) until the art grew old enough to possess a soul or conscience, and then permanent methods were given to us; and even now we sometimes feel inclined to paraphrase the wisdom of Mr. Whistler, and say modern photographs do not fade, and therein lies their deep damnation. This wonderful preservation of a few in all their pristine freshness is suggestive of a special providence, for, according to the scientists, who are, of course, always right, like methods should produce like results, and not one of the old prints should have escaped.

Now, evidence of soul or conscience in a picture is art. Yet there are those who will not recognize that we have a soul, but, like Mr. Gilbert's mechanical figures in the *Mountebanks*, are only stuffed full of badly made machinery that sometimes runs down, and always moves with a jerk; and I am not sure we are not suspected of trying to adopt the “put-a-penny-in-the-slot” business to the fine arts.

It is a favorite reproach with the opponents of photography as a picture maker that its results are all alike; it is one of the triumphant proofs of those who will not admit that photography is an art that the unthinking machine makes all its products to the same pattern; that there is no intrinsic evidence in any photograph of its maker. They will no more believe the plainest evidence to the contrary than those of old would believe the angels. They say we are mechanical, and it is of no use pointing out that this wild assertion is obviously untrue; we hear it over and over again, sometimes from one who knows that it is not true, at others from those who are simply ignorant and cannot learn. These are to be pitied. Then there are those whose purpose it serves to deny; and, worst of all, those who have tried, and altered their faith because they failed—those who, as the poet says, “fade away, and, dying, damn.” To the credit of photographers there have been very few of these; however, we have lately had an exhibition of one of them. A most enthusiastic defender of photography as an art of a few years ago, but who, perhaps, failed to prove it in his works, was politely asked to contribute to a recent exhibition, and is reported to have replied as follows—it is a lesson on the mutability of things to compare this letter with his former opinions: “I am fully persuaded that photography is not art nor can be, and to encourage exhibitions is to lead a lot of vain people to waste their time in the practice of a useless and vain pursuit.”

It has no effect with the prejudiced critic to point out that, if different minds using the same machines produced like results invariably, as machines are expected to do, any one of them who understood the machine ought to be able to turn out a series of masterpieces equal to the best that have ever been produced, always providing, of course, that one machine was as good and as well brass bound and French polished as the other. Yet they continue to say—and this is one of the latest utterances of science—"The picture painted by the artist is a transcript of his own emotions; but a photograph is not a reflex of human emotions at all—unless, indeed, accidentally so—but is a direct reproduction of Nature, and only through science the offspring of man." We must be grateful to the writer for allowing us the accident.

I am quite ready to confess that up to a certain point, and in the hands of the ninety per cent. of the followers of the art who are not artists, the photograph is in the process; but with the others the picture is in the man (as in painting, only in a less degree, and as far as the materials will allow). The process takes a very subordinate place, and is dominated by the taste, thought, and feeling of the artist, when an artist uses it with what may be fairly called emotional results. Who has not laughed with many of Rejlander's characteristic heads, or wept—yes, I have seen even that emotional result produced by a photograph (which was not an accident)—and it is an important part of my argument that all these emotions arose first in the mind of the photographer, and would never have been originated by the same models in the hands of another photographer.

Of all the attempts made to prove that photography was not an art, that which would have most force, if proved, would be that it showed no evidence of individuality; but, on the other hand, if the possession of that quality were proved, it would be one of the strongest arguments in favor of the admission of photography to the brotherhood of art, for individuality, in its products, necessarily implies the operation of a directing mind behind the "soulless camera."

The latest of the many attempts to define the meaning of the word "art" is a very remarkable one. It is said to be "the apparent disproportion between the means employed and the end obtained." And, as an illustration, the following explanation is given, at which, I think, many a practical photographer will smile:

"Admit, for argument's sake, that a photograph reproduces with a fidelity far beyond anything that the hand of man can attain to, it must still be allowed that the means used to attain this end are infinitely more complicated than the few hairs tied to a stick which the artist uses. Indeed, it might be argued that, if art is the apparent disproportion between means and end, photography is not art at all, but science. There is no art on the part of the lens when it produces its images; it does so strictly in accordance with natural laws. The developer acts as thoughtlessly as any other chemical experiment, and these are the chief factors in every photograph. It is true, you have one small part to play—you must have the art of exposing properly; but even here a few shillings will purchase for you a machine to do even this. I do not admit art in development. Art in development is only called in when the exposure has been made without art, and, as I have already allowed art in exposure, I cannot allow it here again. With such an infinitesimal part of the picture the outcome of art, is it honest to call a photograph a work of art?" Are we to understand from this singular piece of reasoning that painting is an art because the painter uses "a few hairs tied to a stick," and does the writer suppose that we claim photography as an art because of its fidelity—that heritage of the youngest amateur? This curious example of scientific knowledge of art is by Dr. J. K. Tulloch, of Dundee, and was written in the present century.

Some writers get confused between degree and kind. In an article in the *Magazine of Art*, a certain writer, who was once a photographer, endeavors to show that photography cannot become art, because its individuality is limited. That it is more limited than painting has always been admitted—we cannot get so far away from the

truth as is the painter's privilege—but it is also admitted that all methods of art are more or less limited, and the amount of limitation is only a matter of degree, not of kind. The limitations add to the difficulty, but do not alter the status.

Let us run back a little and see if we can find a few workers whose results are totally different from those of their contemporaries, and this invariably. One of the earliest photographers to show genuine art feeling in his work was Rejlander. He died sixteen or seventeen years ago; yet, among many thousands of photographs, it does not require much experience to recognize a Rejlander. There was nothing in the manipulation to distinguish them, except, perhaps, carelessness. It was the mind of the man that was visible—you recognize the man beyond the process. There are still those living who can say, on looking at a collection of old photographs, this is a Francis Bedford, a Doctor Dimmond, a Teuton, a Delamotte, a Le Gray or Silvy, a Wingfield or a Mrs. Cameron, certainly quite as accurately as an expert in painting would say this is a Raphael, or Titian, or a Correggio. Then, what becomes of the machine argument?

I will now endeavor to put it another way. Photographs, as I have endeavored to prove, show the mind of the producer—when he has a mind to show—and given two equally gifted photographers, as far as equality can be measured, the one could not produce even a colorable imitation of the work of the other. Neither could dismiss his individuality let him try how he may. Take two representative men, Rejlander and Bedford, neither of these accomplished photographers could have imitated the other. They had both original minds, and followed the bent of their genius, and their hands, as well as brains, showed in every picture.

Among the workers of the present day, I could point to dozens of well-known instances, but one or two must suffice. No man's work has been more imitated than that of M. Gale. In every exhibition, he is imitated in size, style, framing and signature, yet an expert can decisively say of two pictures, this is the Gale, and this the imitation; he can even distinguish between the imitators, and say, this is a—, and this a—.

Then, in a very different style, there are the works of our much-respected President, than whom there is no one I would prefer to see occupy the honorable position which defective health compelled me to decline. Perhaps I am not a fit and proper judge of his pictures, but, without altering my opinion of what a photograph should be, I must confess that some of them have captured my admiration for their beauty and respect for other ways than my own when in good hands. Now, some have endeavored to imitate Mr. Davison, and some have renounced photography in despair, because they could only reach the eccentricity without touching the excellence. It is easy to put the image out of focus, but not so easy to make a picture by that means, and Mr. Davison makes pictures. It is easy to copy peculiarities, but not so easy to imitate valuable essentials.

While on the subject of our President, may I be permitted to add—for he is now in a public position and open to our shots—that, however straitened his views of the practice of photography as an art may have been at one time, his opinions have constitutionally broadened down, until now the keynote of his teaching is liberty for all.

We now come to another proof of individuality. It used to be the practice to insist on unanimity at exhibitions until after the judges had done their work; but this was given up when it became apparent that the judges usually recognized the work of the old hands, and the only nameless ones were new exhibitors. In America—at least, at the Convention Exhibition—the farce of the anonymous is still carried to such an extent that nobody seems to know, officially or otherwise, who the pictures are by until it is too late to be of any use to the exhibitors; and newspaper criticism has to be published without names. For, however the photographs may proclaim their authors, it seems to be etiquette to pretend not to know.

The difference between the works of some of our best photographers and those

of the moderately successful can scarcely be due to a scientific cause, except, indeed, to a reversal of the generally received idea; for I think, if the truth were known, it would be found that the producers of the indifferent pictures had much more scientific knowledge than those who produce the most artistic pictures. I am acquainted with a great many of our photographers, but I do not know one of those to whom we are accustomed to look for the chief ornaments of our exhibitions who have any elaborate scientific knowledge. Indeed, their technical methods are so very simple as to seem quite elementary. They usually take a plate to the make of which they are accustomed, a simple pyro and ammonia developer, a handful of hypo, and a jug of water, and use them properly, and that is all. They do not bring science to bear even on the exposure, at the expense of "a few shillings." They get on without an actinometer. They feel from experience when their plate has had enough, and an actinometer, however perfect, would only confuse them. But, as they endeavor to put taste, thought and feeling into their pictures, their works necessarily differ from those of the scientist, and the essence of their art is individuality.

My last word must be a word of caution. Be original, be unique if you can, but not out of harmony. Individuality goes wrong when it is out of harmony with its surroundings. Eccentricity is very easy, but it does not last. It is open to the meanest capacity, and is often assumed by it; but genius, to be useful, should consist of individuality, backed up by suitability to its environments.

[From *Photography*.]

HOW TO LOOK AT PHOTOGRAPHS.

BY FRANK M. SUTCLIFFE.

[Read before the Edinburgh Convention.]

PHOTOGRAPHS are generally said to show either technical or artistic excellence. Sometimes both qualities are visible in the same piece of work, sometimes they are not. There is another quality which ought to be present in all photographs, without which no photograph can be considered perfect; and until this quality has been recognized, the photographer should stop before he pats himself on the back and says, "What a good boy am I," after he has taken what he may look upon as a perfect piece of work, as an example of technical skill, or as an attempt at picture-making. It may be clever, yet, for all that, it is a failure if it cannot speak to those who look at it.

There has been, as you all know, a lot of strife between what has been called the old school and the new, or the sharp and the unsharpened; it seems to me that if both these parties had looked at their work and at that of others in the right way, all this bickering would not have been. It would almost appear as if many consider their photographs as an end rather than a means to an end, and as if all that is expected of of the spectator is that he should admire the skill of the worker as shown in his work; sometimes even it appears to be the author of the work who expects to be admired. Only the other day this was strongly impressed upon me. A youthful photographer was pointing out the beauties of what he considered a most successful picture which he had just finished, to one of our oldest photographers, saying how he had been advised to place a figure at such a spot, but did not, because and because; seeing the old photographer smile, he stopped in his oration, and, I hope, received a useful lesson when the old one said: "Pardon me for smiling, but I was thinking of a whipping I once got for falling into a horse-trough the very image of the one you have there." That old photographer knew how to look at photographs, for he was able to make them speak to him and recall to his mind bygone days. The person who looks at a photograph as a complete picture, unable to say anything about anything except the facts which existed at the moment of exposure, does not see very far. You may contend that, if this is true, it will depend more upon the spectator than upon the photograph, for what will give pleasure to one will say nothing to another. To be sure, if

the spectator is blind to everything except the mechanical part of the work, the loss is his alone; but he need not, as he often does, call attention to his own ignorance by denouncing a picture a failure because his mind happens to be blank except so far as a knowledge of a certain kind of mechanics may go.

If a photographer thinks he can tell his tales better by making his works microscopically sharp, let him do so by all means; if anyone's hobby is the study of mosses and fungi, no pinhole or spectacle-lens view will remind such an one of the happy days he has spent in poring over damp walls in musty nooks and corners. To some an extremely sharp picture may be positively painful, for it will perhaps disturb and break the train of thought, whereas a less-defined one would allow the mind to wander at its own sweet will. At the last exhibition of the Photographic Society, the hanging committee, the secretary, and the judges, had the opportunity of studying a few works which the rest of the world were not allowed to see. I don't allude to those which were hung on the floor, and afterwards consigned to the cellars, but to a small collection of pictures by the worthy President of this Convention. Among them was an almost ideal photograph. I don't mean that it was so uncertain and undefined that it could have represented anything the spectator might have been pleased to wish, but it was just enough to start the mind along a pleasant channel. The foreground did nothing more than carry the eye to the principal object, and when it got it there the eye was politely asked to take a seat, and the mind then began to entertain the spectator, and picture after picture were put before him; one heard the wind blowing and whistling through the mill sails; then it almost died away, only to come again in louder and louder gusts. Now the miller and his man come out and look anxiously, first at the yellow sky, and then at the wands, from which they take in nearly all sail. Yet the big arms rush round at a fearful rate as the sky gets darker and darker; what an enormous size the mill looks—did you ever go underneath a mill's sails in the dark? What terrible things the arms are—they are more like a nightmare than anything real, as they come down threatening to crush you at every turn, yet never getting any nearer. Then, perhaps, you awake from your dreams, only to find yourself inside the mill on a bright summer's morning, where the snowy whiteness is but little less dazzling than the sunshine outside. You notice how spotlessly clean the floors are polished by an unending stream of golden grain; your nostrils drink in, with infinite delight, the scent of newly ground wheat. Perhaps the miller weighs you on a big, old-fashioned floury scales, in which have been weighed, in good years and bad, the daily bread of the whole village. All this and much more, did Mr. Davison's simple photograph say. Had it been taken by one of the cast-iron school, the same pleasant train of thought might have followed, if (mark the "if," if you please) one could only have kept at a distance of ten yards; but where is the man who is content to look at a photograph from this distance? No, it would have drawn us nearer and nearer, and every step would have disturbed the train of thought by forcing other subjects forward. Most likely the excellence of the lens would have been impressed upon us, and once started on such a subject as cameras and lenses, good-bye to all pleasure.

You may think a windmill is a very suggestive subject—almost alive, as it were—and that it is only natural that it should have a story to tell. Very well, then, take photographic portraiture, or likeness-taking, as it used to be called—which are the successful portraits? Those which are most beautifully posed, most brilliantly lighted and most elegantly retouched? Not a bit of it. The best portraits are those which remind us in the happiest way of the originals. Those sitters who go to be "took" only to please themselves are invariably disappointed, and "serve em right"; for who, in their senses, wishes to be reminded of themselves? Or take views for a change. Why do people buy local views? Are they allured into spending their money because they are offered such exquisite examples of photographic art? No; all the tourist wants is something to remind him of the places he visits, something to strike a note in his memory. A few years ago I took a view, but somehow or other it did not sell at all,

though it was as clear as the most fastidious could wish for. No ; the view which sold was taken by the other man, though he ought to have been ashamed of it, for the grass was black, and his whites were white without any mistake. But his prints sold ; do you know why ? At one corner of his view was a whitewashed public-house. I learned afterwards that visitors called there to refresh. My view did not include that ugly public-house. What I gained in artistic excellence I missed in sentiment and *£ s. d.*

There is another class of work which should certainly be able to speak. I mean subject or *genre* pictures ; but these sometimes fail to appeal to anything but the spectator's sense of humor, so narrow is the line which divides the sublime from the ridiculous.

Turn to whatever branch of photography we will, it is hard to find one that does not provide ground for our airy palaces. You have all heard of the man who had been so badly brought up that—

“ The yellow primrose by the river's brim,
A yellow primrose 'twas to him,
And nothing more.”

Somewhere on the walls of this room you will find a photograph of some animals—sheep and lambs. Now, this little photograph will most likely say to you what the yellow primrose ought to have said to the unfortunate man. It will remind you of the days when you were young and innocent as the lambs ; it will remind you of successive spring-times, of the birth of many happy years. Young lambs always remind me of a photographer I knew when a boy, He was always singing—

“ If I'd as much money as I could tell,
I wouldn't go crying, ' Young lambs to sell ! ’ ”

He had, like many of us, mistaken his vocation, and was consequently miserable.

If possible, whenever you look at a photograph, try to forget the photography. An architectural photograph will preach no end of sermons in stone to one who is well versed in the history of architecture, but to one who knows nothing of this art it will only tell of small stops, wide angles, and the like ; it will supply him with less mental food than the view of the lambs would to a man who had never known the country, to whom sheep and lambs only meant mutton chops and lamb and mint sauce.

No doubt you are thinking, who do you expect has time now-a-days for all this dreaming, and will be saying that you want your pictures ready made without being at the trouble of making them for yourselves. If these are your thoughts, I am afraid you find the world a very hard place, for if you take away the “ make-believe ” with which life is colored, you must make existence almost unendurable.

Those among you who are unable to agree with what I have said will, I think, at least admit that it is better to take your photograph first, and then build your ideal on it, than to raise your ideal and then expect to be able to take a photograph to come up to it. I will, if you will allow me, give you an example. A customer of mine wanted his shop-front taken. By the way, shop-fronts are about the only things the amateur has left for us poor professionals to take. Well, I took the shop-front, but it failed to please. Why ? Because my customer expected the photograph to rise as high as his imagination did. When I asked him to point out the faults, he said that, in the first place, the young lady looking out of the window was too short and fat, not tall and graceful, as she should have been. Secondly, a wax figure he expected next week for the window did not show in the photograph ; but his principal objection was that a gilded sky sign, which he intended having put up next winter, was not in my picture.

May I say that a photograph gives us the naked truth, which has to be clothed by the imagination.



WHEN you go to say what you think, it is always best to think what you say !

[From *British Journal of Photography*.]

LIGHTING AND EXPRESSION.

BY EDWARD DUNMORE.

"LIGHTING and expression," words familiar to all photographers, but especially to those whose attention is chiefly given to portraiture, is equally important to that other section of art workers who choose to devote their energies to the portrayal of Nature, whose studio is not limited to the space enclosed between four walls, and whose skylight is not dimmed by the useful and translucent glass. Landscape and architecture, although not so commonly associated with the terms chosen for the title of this paper, owe nearly all their attractiveness to the qualifications conferred by the direction of the light, and the management, so to say, of the effects of atmosphere. That lighting is the spirit of the picture is always tacitly acknowledged, and expression is lighting combined with other qualities, especially that of atmosphere; skillfully directed, that confers an indescribable something, that for want of a better name may be termed the quality of soul in our photographs. The importance of lighting, although universally acknowledged, is, like many other important things, frequently neglected; it is not looked upon as an *essential*, and the consequence is that numberless photographs, excellent in definition, and good in composition, entirely fail to give that satisfaction proper judgment in this particular would have rendered them capable of giving.

Artists, not being photographers, almost always give preference to a photograph for its chiaroscuro, and not for its detail and definition. Artistic feeling is generally opposed to photographic definition, simply because definition has been the chief point the photographer has worked for, to the exclusion of feeling. The two qualities might be just as readily combined as set in opposition to each other, and I have no doubt the time will come when they will be worked much more harmoniously together than they are now. We see signs of this at each succeeding exhibition, the standard of quality being gradually raised, and a general all-round improvement taking place. We may notice that the definition is no better than it was, and no worse; the improvement is in the aim at a better general effect, more attention being given to the lighting, and greater care bestowed on the composition. We have been so accustomed to hear splendid definition and microscopical sharpness lauded above every other quality in a photograph, that unless the picture will bear examination with a magnifier it is set down as inferior, and we are astonished when a less sharp but better lighted picture is preferred. "Naturalistic" photography, however indefinite and wild in its aspirations, has certainly had the effect of making photographers think, and the outcome of that thought will be, no doubt, to the benefit of the art.

The most simple and homely subject, well lighted and treated with artistic judgment, appeals to our instincts in quite a different manner, and much more pleasantly than when absolute sharpness throughout has been the chief and almost only consideration. Let us, as an experiment, take the trouble to carefully consider the same grouping or view under different conditions of lighting; it will be found that not only infinitely superior effects are produced at one time than another, but that the actual composition is altered; each variation of the light will bring some object into prominence that was previously hidden, and obscure others that were before the chief points in the subject. Let us suppose we are looking at a woody glade with the shadows of the trees thrown across the path, some cattle in the foreground, whose warmth of coloring contrasts well with the cooler tints of the foliage and distance. The camera is fixed and the exposure made, and we consider we have secured a gem. It was our last plate, so we will pack up and treat ourselves to a rest and a pipe under this fine old elm. The cattle remain much in the same position, lazily chewing the cud; the birds twitter, and the soft summer breezes now and again gently stir the foliage. Yet, as we look, a change gradually comes over the view. Branches and leaves we had scarcely noticed catch the light, shadows are cast from this object and the other that we were scarcely conscious of existing; a tuft of grass or a group of foliage becomes an important point, giving a life and vigor to the subject that when we exposed our plate was simply non-existent. If we had only waited, how much better it would have been!

We have secured a picture, it is true, but nothing in comparison with what we are now looking at. But regrets are useless. We can do nothing more than watch the

lights change and the shadows alter. The view is passing through a series of transformations, some better, some worse, all different, and to our chagrin many of the changes are a considerable improvement on the one we thought at first so excellent; we move away, much less satisfied with our performance than when we closed our camera and sat down in the shade to rest. This is not a rare experience so far as the view goes, but one that is of frequent occurrence, and emphasizes the necessity of a knowledge of lighting that would have indicated the advantage of waiting a little time before making the exposure, and have assisted us in securing a much better picture than the one we did.

There is no denying that in a great many instances the idea of the photographer is to secure as many average pictures as possible on a day's outing, instead of only exposing on subjects known from experience to be lighted in the most favorable manner. It must be confessed that some resolution is required to pass a fairly good effect, waiting for a better, and resolution is very often not equal to the occasion; when it is, the results give an amount of satisfaction that fully compensates for the forbearance. A picture, whether a photograph or a painting, may be considered a collection of foci holding their places by a series of gradations, subject to one great controlling focus, itself composed of innumerable foci of various degrees of light, which, united, make the chief light. Other lights in the picture must be kept subservient to this, the minor or accidental lights not be allowed to interfere with the breath or repose of each mass, so that the eye, being first attracted by the principal object, may be gradually led to the minor points that, as it were, support the principal one, and form an harmonious whole. In photography it is not always possible to properly effect this on the original negative, although it should always be aimed at, for much more can be done in this direction than at first sight might seem possible. Where failure takes place, doctoring the negative and dodging the print comes in to make up for it. Here, I may observe, as the print being the ultimate object of taking the negative, its production should be entirely under the control of the taker of the negative, it being impossible for any one else to know what effect it was desired to render, for very few negatives printed "as they come" fulfill the expectations of the taker of the negative. But all, more or less, require management in the printing—lighter here and darker there, a light stopped out or a light put in, sometimes on the negative and sometimes on the print. When all this is satisfactorily arranged, then, and only then, can the ordinary printer have orders to go on printing without the supervision of the negative maker.

(To be continued.)

ANSWERS TO "A TOUCHING APPEAL."

WE are glad to acknowledge the receipt of the following amounts as subscriptions to the H. H. Snelling fund.

| | |
|------------------------|---------|
| C. D. Fredricks..... | \$10.00 |
| Alexander Beckers..... | 25.00 |
| F. W. Guerin..... | 1.00 |
| E. Long..... | 5.00 |
| M. Carey Lea..... | 15.00 |
| T. E. Benedict..... | 0.50 |

Other subscriptions are promised, but the amounts have not yet been stated. Those given above have been received and sent to Mr. Snelling. Our charitably disposed readers may send any amount they please, but send soon and help while you may. *Are there no more who are willing to help?*

OUR ILLUSTRATION.

IN this issue we have the privilege of offering to our readers a masterpiece from Dana's Brooklyn studio, printed on American Aristo paper, which forms a fitting accompaniment to the artistic perfection of the charming group.

Mr. Dana's well-deserved reputation, already acquired in this city, bids fair to be brightened by such a charming example as this, of which he may be justly proud.

ANTHONY'S Photographic Bulletin.

EDITED BY

Prof. C. F. CHANDLER, Ph.D., LL.D.,

Aided by **ARTHUR H. ELLIOTT, Ph.D., F.C.S.,**
and a corps of practical assistants.

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Advertisements should reach us not later than the Saturday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, six, twelve or twenty-four issues.

E. & H. T. ANTHONY & CO., Publishers.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. Correspondents will please remember this. No attention will be paid to anonymous communications.

Q.—L. W. C. writes: Can you direct me to any photographic publication which treats of the transferring of photographs on enamel, such as china-ware plates? There was an article published on the subject in the "Photographic Year Book" for 1886, by N. K. Cherrill. Is it possible to obtain that book now; and, if so, where and at what price? There is an extract from it in your "Dictionary of Photography," but it is not sufficiently explicit in detail. I have heard also of another process which transfers by the use of bromide paper, which is a much simpler process, I should judge. Please inform me if there is any work published which gives

instructions how to transfer photographs on china or porcelain, and where I can obtain it, and at what cost, and I shall be very grateful. To be more definite, I desire to transfer landscapes onto china plates to be afterwards fired.

A.—Any good work on Photographic Printing Methods will have a chapter devoted to photo-ceramics. In "Manual of Photography," by Carey Lea; "Photographic Printing Methods," by W. H. Burbank; "Printing Processes," by W. K. Burton, etc. Our publishers can supply you with any of these works.

Q.—C. M. writes: Can you give me, please, a recipe for making the very best paste for inlaying and mounting prints for extra book illustrating? Or what is the very best adhesive preparation to be had ready manufactured, and of whom and where to be obtained?

A.—Good starch paste is excellent for this purpose. It may be prepared by grinding up the starch with a little cold water until a perfect emulsion with no lumps is obtained. Pour this, with constant stirring, into boiling water, when a jelly-like mass will result on cooling. Do not boil after adding the starch. The "Daisy Paste," sold by our publishers, is also most excellent for this purpose, and will keep for a long time without becoming mouldy.

Q.—F. B. writes: Will you kindly inform me through the BULLETIN how to mount prints on cards 5 x 8, so that they will be flat when dry?

A.—Allow them to dry under pressure, between the leaves of a heavy book or under a copying press, being first careful to remove all excess of paste from the corners; place a clean soft cloth between each one, if possible, to further guard against any possible sticking together.

Q.—J. C. F. writes: Will you please tell me through your columns of "What Our Friends Would Like to Know," what is the best grounds to retouch on with pencil, and how made? and if you can keep photos flat after mounted without burnishing?

A.—The annexed letter just received seems to answer the first part of your query. For the latter part see answer to F. B. in this issue. "I see in July 9th BULLETIN that H. B. has trouble about the retouching coming off when he varnishes. I have had the same trouble with any kind of varnish, as it will remove a small part of the retouching, especially if it is surface retouching, but I have no trouble now

as I varnish before retouching. I find that most varnishes are too heavy. I use

| | |
|-----------------|------------|
| Alcohol..... | 4 ounces. |
| Ether..... | 4 " |
| Gun cotton..... | 16 grains. |

and dry with gentle heat after flowing only. The retoucher makes his solution to suit the varnish."

Q.—A. A. S. writes: Do you know of any firm that manufactures portable photo houses? Is there any such that make them out of paper or some other light material? Please answer through the columns of your valuable paper, the BULLETIN, giving their address, and you will confer a favor.

A.—We believe the firm manufacturing the Ducker Portable Houses could give you the information you desire. Write the Ducker Portable House Company, 239 Broadway, New York City.

Q.—J. P. writes: Please inform me through the BULLETIN where I can buy the Magic Photos by the hundred, postage-stamp size.

A.—We would advise you to write to the *Scientific American*, New York, for this information, as the article in the BULLETIN was taken from it.

Q.—G. L. G. writes: Will you kindly inform me what is meant by squeegeeing a picture or how it is done.

A.—To squeegee a plate it is placed face downward on a clean piece of glass or hard rubber, and pressure applied to the back, either by means of the hand or a rubber roller, in such a manner as to expel all air bubbles from between the two surfaces and bring them into close contact with each other.

Q.—L. G. J. writes: Will you kindly say in the BULLETIN how to mix dry sulphuric acid so as to get the right strength for use in the Carbutt formula for pyro developer? Also, can the yellow stains due to the prolonged alkaline development be removed after the plate has been fixed in Carbutt's acid fixing bath and dried?

A.—Sulphuric acid is ordinarily sold in the liquid state, and may be readily measured as indicated in the formula to which you refer without any dilution with water. When purchasing it, the concentrated form should be asked for.

Q.—A. A. S. writes: I have tried your formula for coloring "Stops" black as given in the BULLETIN of June 25, 1892, but without success. The druggist had to make the sulphuret of potash; he said they did not have it in stock, as it was difficult to keep it

from spoiling. I took one-half ounce of the sulphuret and $4\frac{1}{2}$ ounces of water, making a 10 per cent. solution, and first cleaned the "Stops" thoroughly in a saturated solution of washing soda, washed, and then immersed in sulphuret solution for ten minutes, washed again and dried, but the "Stops" were only slightly colored, and that a yellow. I tried it several times, leaving it in longer. Even went back to the druggist, and procured more of the sulphuret of potash, thinking it might not be right, but he said he was sure that was right, and the result was the same. What is the trouble? By answering, you will confer a favor.

A.—Undoubtedly your trouble lies in the sulphuret of potash. It is readily procurable in any of the larger cities in a solid state. We judge from your letter that the druggist furnished you with a solution of this salt. If so, use it full strength and see what the result will be. From personal experience we know the formula to be correct.

Q.—E. H. H. writes: Will you kindly answer the following, under "What Our Friends Would Like To Know?" 1. Last summer I intensified a number of plates with bichloride of mercury and ammonia. Looking for some negatives lately I noticed that those that had been intensified were being spoiled, starting from the border and going inward. Can this be stopped, and is there a method of permanent intensification? 2. When a negative has been varnished with plain collodion, can this collodion be removed from plate after drying without detriment to negative? 3. What is a good formula for collodion for this purpose?

A.—1. Your trouble probably arises from one or two causes: Either the hypo was not perfectly removed from the plate before intensification, or it was not thoroughly washed afterwards. We would advise soaking the plate in a bath of acid sulphite of soda, and then a thorough washing in water as a possible means to prevent the further deterioration of your negatives. Personally, we prefer a development with hydroquinone after the plate has been "whitened" with mercury to the ammonia treatment. 2. Soak the plate in a mixture of equal parts of alcohol and ether. 3. The collodion for this purpose should not be too thick. One which flows readily and evenly and is yet of sufficient body to protect the negative is all that is required. The formula given in the answer to J. C. F.'s query seems to us to be a good one, and we should advise you to try it.

Views Caught with the Drop Shutter.

WE learn with pleasure of the organization of the United Retouchers' Association of St. Louis. Its objects are : The elevation of the trade, the securing of help for those who are in need of it, and the obtaining of positions for those members who may be out of employment. It is designed to make this organization a national one, and we heartily wish them success in their efforts.

WE note, with deep regret, the demise of Mr. WILL. H. HARVEY, of Columbus, Ohio, a photographer who had gained a wide reputation for artistic work. Mr. HARVEY was sick for only a few days with dysentery and died on the 20th of August last.

JOSEPH C. BATCHELDER, a wealthy retired photographer of Boston, Mass., died at Nashua, N. H., on the morning of the 20th of August. The deceased left generous legacies to the Odd Fellows and the Old Ladies' Home, and his loss is deeply mourned by his numerous friends.

WE note that W. S. MCKINNON, of Columbia, Pa., has sold his interest in his photographic studio to Mr. ZIMMERMAN, his former partner, and will leave for Decatur, Ill., to study dentistry with his brother. We heartily wish them both success.

IN a fire which broke out in Geneva, Ohio, on August 20th, the photographic studio of Mr. S. P. MEANS was damaged to the extent

of \$2,000. Unfortunately, only \$1,000 worth of insurance was carried.

A SHOOTING affray, which will probably result in the death of Mr. EDWARD A. DAVIS, of Chicago, Ill., occurred on August 20th. It appears that the gentleman in question had taken his two-year-old baby to the studio of GEORGE H. YOUNG, at 4315 State street, to have its picture taken, and subsequently refused to pay for the pictures, on the ground that they did not do the baby justice. Subsequent efforts on the part of Mr. YOUNG to collect his bill resulted in considerable ill feeling on both sides, and the matter was twice carried into court. On emerging from the court on the second occasion a quarrel ensued, which resulted in the shooting noted above.

WE recently received cards for the marriage of Mr. E. F. ZIMMERMAN, son of E. O. Zimmerman, of Zimmerman Bros., the well-known photographic merchants of St. Paul, Minn., to Miss Laura Emma Heinrich, also of that city. The marriage ceremony took place at the residence of the bride's parents, 342 Bates avenue, and was largely attended. The presents were numerous and costly and vied in beauty with the blushing recipient of the honors of the occasion, the fair bride, whose happiness was apparent in every word and movement. The young couple intend taking a somewhat extended wedding tour of about two months, returning home by the twentieth of October, when they will receive the calls of their numerous friends. We most cordially extend to them our best wishes for a successful and happy future.

TABLE OF CONTENTS.

| | PAGE | | PAGE |
|---|------|--|------|
| ANSWERS TO "A TOUCHING APPEAL"..... | 541 | LETTER FROM GERMANY, <i>by Dr. H. W. Vogel</i> | 518 |
| DEFECTS PRODUCED IN PLATES BY TIME, <i>by Prof. W. K. Burton, Tokio</i> | 532 | LIGHTING AND EXPRESSION, <i>by Edward Dunmore</i> | 540 |
| DESCRIPTION OF THE SILVER HALOID BY MECHANICAL FORCE, <i>by M. Carey Lea</i> | 524 | OUR ILLUSTRATION..... | 541 |
| EDITORIAL NOTES..... | 515 | PHOTOGRAPHY BY RULE—A RETROSPECT, <i>by Thomas Bedding</i> | 527 |
| HINTS ON FITTING UP AN AMATEUR DARKROOM..... | 513 | TO MAKE PAPER ADHERE TO METALS..... | 523 |
| HOW TO LOOK AT PHOTOGRAPHS, <i>by Frank M. Sutcliffe</i> | 537 | VIEWS CAUGHT WITH THE DROP SHUTTER..... | 544 |
| INDIVIDUALITY IN PHOTOGRAPHY, <i>by H. P. Foxton</i> | 534 | WET OR DRY LANTERN SLIDES, <i>by "An Outsider"</i> | 522 |
| | | WHAT OUR FRIENDS WOULD LIKE TO KNOW..... | 542 |



Harry Lauder

ANTHONY'S

Photographic Bulletin.

EDITORS :

PROF. CHARLES F. CHANDLER, PH.D., LL.D.

PROF. ARTHUR H. ELLIOTT, PH.D., F.C.S.

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No. 18.

THE LANTERN CRAZE IN PHOTOGRAPHIC SOCIETIES.

To our mind it is decidedly a step in the downward direction when so many of our photographic societies become imbued with the ruling desire to convert everything into a lantern exhibition.

For illustrative purposes, especially when used in connection with a lecture, the lantern has no superior, or even equal. To outsiders and the general public, a lantern exhibition has many attractions, and, when used to excite a healthy interest in the doings of a photographic society, it is undoubtedly of much benefit. To such an employment of it we would offer not the slightest objection or criticism. But, alas! Few are the cases where the task once acquired remains limited within reasonable bounds.

No other phase of the photographic mania seems to take such absolute possession of its devotees. Once a lantern-slide fiend and everything else is dropped—prints, negatives, everything is judged by the sole standard of “Will it make a good slide?” If so, it is enthusiastically received, and permission is at once craved to copy it. If unsuitable, by reason of some particular quality, which a hundred chances to one is that which makes it especially valuable in your eyes, it is cast aside with a superficial glance, and the lantern fiend goes on with his never-ending search for something to make a slide from. Books, illustrated articles, a few insignificant $3\frac{1}{4} \times 4\frac{1}{4}$ bits out of large negatives—nothing, in fact, is secure from his ravages. And to what end?

Without doubt, this persistency has resulted in a great improvement and perfection of plates, and developers for transparencies; and, so far as it goes, has in this way been of benefit to the fraternity at large.

But it is claimed that slides are far more permanent than the much-abused and evanescent silver print. Try a platinum, or bromide, or carbon, or a hundred other prints, and compare their permanency with your boasted slides.

Moreover, let a few of those self same slides fall on the floor or come in contact with the vigorous dusting of a lately imported and quarantined domestic. If one out of a dozen survives, you are fortunate indeed.

Moreover, at its best, a development of this kind is a mechanical one pure and simple; a mere reproductive process, beautiful in many instances it is true, but neither more nor less than this.

Far different is it to the tentative and careful development of some cherished exposure which you have waited weeks to obtain, and exercised all your skill to have perfect in every detail. Eagerly you watch it come up, faintly at first, then gathering strength and detail. Has the lighting been as good as you wished for? Has the wished-for prominence of a certain object been destroyed by an unsuitable background? By some happy chance did you catch that fleecy cloud bank in the east, and can you keep from losing it in the density of your sky? A hundred questions rise, and with them your hopes. At last it is developed, and you have your perfect negative. Such a beauty! Surely it was worth trying and waiting for, and the skill and experience that you have gained as the years have gone by are something to be proud of, to glory in.

You hasten to contribute a print of it to the Club Album, and, perhaps at some future day, you have the pleasure of seeing some obscure little corner of it, possessed of certain peculiar qualities, thrown upon the screen; and a feeling of longing for the rest of it, and indignation at the man who thus ruthlessly dissected your masterpiece, arises in your breast.

Not satisfied with this mild species of "rubbing it in," you find that the intelligent operator has hopelessly sandwiched it in between a tenement-house scene and the Seventh regiment marching down Fifth avenue.

And just here we have another grumble to make: The heterogeneous jumbling together of any number of dissimilar subjects that usually characterizes a so-called lantern exhibition.

If any of us had the good fortune to possess a slide of that ancient relic, Noah's Ark, it would undoubtedly be placed between "Our President Coming Around the Corner," and that well-known diminutive Negro study of "Who's a Democrat?" followed by the inevitable *chef d'œuvre* of the evening—an impossible rendering of the two Huguenot lovers, or plain American "Spoons," as our country cousin would term them, were it not for their title.

To return, however, work of this kind is unworthy the serious attention of our societies.

Why not institute competitive researches as well as competitive print exhibitions. Let certain subjects worthy of investigation and discussion be proposed, and the members invited to compete in an investigation of them.

Surely a medal for marked progress in photographic science, not mechanical skill, would be of far more value to the owner, and be far more to his credit than a prize for the best composition of nobody's choice or somebody's impossible offer.

Of course, all of us have our hobbies. Some prefer the picture side of photography; some, the general investigating side; and some, the strictly chemical aspect of our art.

To each we would say, do some good systematic work, which, when done, would be of value to our fellow club-members and not serve solely as an ornament to our albums.

Do not crowd out the beautiful—there are enough hard, stern realities to life ; but do crowd out that desultory fashion of making exposures at random and because it looked rather pretty on the finder.

If you are interested in faces and types, don't display it by innumerable groups, most of them badly composed and remarkable chiefly for their stiffness.

Take down your hand camera and frequent the highways and byways of the city. Make your exposures on subjects possessed of action, illustrating some particular trait or characteristic.

The Italian sorting the rubbish on the city dumps ; taking his noonday meal ; disturbing the contents of an ash barrel, or sporting the gorgeous uniform of the street-cleaning department in a successful effort not to keep the street clean.

Follow him in his various moods and occupations ; study the women carrying heavy burdens on their heads, and walking with that peculiar gait so characteristic of them as a race.

Record them in their holiday attire ; visit the " Bend " and the Italian quarters, and jot down a photographic impression of a motley crowd.

Note the children from their early appearance in tight bandages which completely envelope them through their gradual development as street gamins, boot-blacks and fruit vendors, and you will have a set of pictures valuable and interesting, recording manners and customs in the only satisfactory way known to modern science.

Through their art we have learned the customs of many a bygone people, and our own some day will be recorded in a similar manner.

Extend your investigations through the various nationalities, classing each nation by itself, and you will find an added interest to your work, and a field that is almost limitless.

Do you want something more scientific? Try upon a certain brand of plates the effect that different colors have ; place them side by side and in contrast, making equal exposures, and you will have learned much as to what not to try. Do this systematically, and then compare it with results obtained in the same way from the same subjects, but with the interposition of various color screens.

Do you know exactly the difference in effect that your different stops give? Mathematically you know the difference in exposure, but have you ever tried the same length of exposure on a given subject, with a given light, substituting successively one stop for another till you have used them all? Try it once, and carefully compare the results. Then try the same subject with each stop, giving it the proper exposure ; each time vary your subject, and by the time you have finished you will have learned more of stops and their effect than you ever dreamt of before.

Test your developers in a similar way. Vary their proportions, and try them on equal length exposures of the same object. Keep your negatives and label them, and you will find few people to whom they are not of interest.

This is what we mean by systematic work. Work that has some object in it, and which, when performed, is something more than pretty. You have learned by it ; your friends can also benefit by seeing your results in a way that volumes could not bring home to them.

Photography is worthy of being something more than a plaything ; our

clubs of being something else than print and slide collections, often of doubtful merit, and always without definite aim or object. Photography doesn't need such encouragement. It has gotten far beyond that. But it does need honest painstaking, and, above all, systematic work, to keep it from degenerating into a mere plaything.

EDITORIAL NOTES.

THE recent competition outing of the California Camera Club is said to have been much enjoyed by the mosquitoes of Ignacio, even if their efforts at drawing out the best elements of the photographic party were not wholly appreciated. It seems from the accounts that reach us, that the prize pictures will very likely all have a very bovine character, as little else than "beef on the hoof" presented itself to be pictured. The party enjoyed a very pleasant trip nevertheless, and returned with all their plates exposed on the cattle. The twenty-seventh illustrated lecture was given before the Club on the 26th of August, by E. McD. Johnstone, whose subject was "From the Mississippi Delta to the Columbia"; several musical selections were rendered, and the evening was, as is usually the case, very profitable to the club. The first annual Print Exhibition was held on the 5th, 6th and 7th of this month, and a fine collection was shown. A Lantern Slide Exhibition was held on the 13th inst.

WE are in receipt from Charles G. Barbé, of Homer, La., of four portrait studies on "Aristo" and albumen paper, which have many excellent points. One, a large head of child, is full of modeling, well rounded and extremely life-like in pose and action.

DR. STOLZE recommends aluminium chloride in conjunction with amidol developer for gelatino bromide paper, with a view to hardening the film and preventing softening and frilling. The amidol should be only diluted with one-half the usual quantity of water, and the other half made up afterward from a 1 per cent. solution of aluminium chloride. Development will be slow, owing to the film becoming harder as development proceeds, but it will result in excellent detail. It is also said to be a valuable adjunct to amidol in the development of bromides, which may then be safely dried between blotters, or at a much higher temperature than the film would otherwise stand.

A PHOTOGRAPHIC feat requiring a deal of hard work and no small amount of climbing and exposing from dizzy heights has just been accomplished for the *St. Nicholas*, where the operator succeeded in obtaining some fine views of one of the largest natural bridges known in this country.

THE severe hot weather of July, both in this country and abroad, raised havoc in many process-printing establishments which were dependent on gelatine for their work, as that agent, which, at best, is apt to prove treacherous, is in hot weather a veritable enigma. Operators and sitters alike found the posing room on some of these hot days anything but comfortable, particularly under the large skylights.

DR. WENDER, of Austria, is authority for the opinion that the potassium iodide of commerce, being washed in process of manufacture, with hyposulphite

of soda, is very apt to become impregnated to a considerable degree with this chemical.

THE Society of Amateur Photographers of New York enjoyed a lantern slide exhibition on Friday evening, 23d September, on which occasion views by the Baltimore, Portland, and Newark Camera Clubs were shown.

CAPTAIN EUGENE HIMLY recommends as a means of obtaining increased brilliancy in blue prints, that they be treated with a 5 per cent. solution of some ferric salt; as, for instance, perchloride of iron, after which they should be well washed.

THE Marble Slab Club is the name of an organization of amateur photographers, located in Harlem, of which Robert C. Kraft is President; Hermann Reuss, Vice-President; Gustave Katz, Secretary, and Joseph Buck, Treasurer. An exhibition is planned for this fall, which will probably be followed by a supper and dance. The club membership is limited to sixteen, and it partakes largely of a social as well as photographic nature.

BEAUTIFUL colored effects or tints may be obtained on prints on gelatino chloride paper, according to Herr Liesegang, by immersing the finished prints after washing in either of the following baths: For red color, bathe for a half minute in a concentrated solution of diamand fuchsine in cold water. For green, immerse for three minutes in aniline green, 0.2 part; water, 800 parts. For blue, use alkali blue, 0.1 part; alcohol, 20 parts; and water, 600 parts. Time required will be about four minutes; and for violet prints, bathe for one minute in methyl violet, 0.1 part; water, 500 parts; other coloring agents may also be employed as well.

SEVERAL members of the Lynn Camera Club enjoyed a very pleasant outing at Gloucester, Mass., in the latter part of August, on the occasion of the rendezvous of the White Squadron in the harbor. Many highly prized pictures will result from the excursion, to adorn the rooms of the club in the future.

A VERY interesting photographic exhibit to the World's Fair will be made by Sydney, N. S. W., to consist of some 400 views, each 30 x 40 inches, one of the finest of which is said to be an enlarged view of the moon from a negative by the government astronomer, Mr. Russell.

REPRODUCTIONS of some wonderfully fascinating studies of lightning by Mr. W. N. Jennings, of Philadelphia, have lately appeared in *Electricity*, and with them a most interesting article from this gentleman, who has made the subject his especial study for several years, and whose opinions are deserving of much weight. Mr. Jennings describes the production of a thunderbolt as the discharge of "a drop of molten matter upon the surface of a cloud or a sea of rain, when there slowly moves through space a thunderbolt, gliding on a film of steam," the action of nature in this case being exactly the reverse of that produced by placing a drop of water on a hot stove.

The opening of the new rooms of the Minneapolis Camera Club is to take place on the 14th inst., on which occasion an illustrated lecture on "Pictorial Effect in Photography" will be given by William Channing Whitney. We would extend thanks for an invitation to attend.

MR. S. R. STODDARD, of Glens Falls, has just returned from an extended tour through portions of Alaska, and is much impressed with the picturesque beauty that abounds in that country. Mr. Stoddard proposes to prepare an illustrated lecture on this region, and, with the one thousand negatives he obtained during the trip, will have plenty of material from which to draw.

WE have at our office a very handsome 20 x 24 silver print of the annual Rhode Island Clam Bake of the Stuyvesant Club, at College Point, L. I. The print contains over 800 figures, and is remarkably clear and well done as a piece of photography. It is the work of Massey, the well-known artist of New York, and we must congratulate him on his uncommon success. We believe the negative was made with a 21 x 25 Dallmeyer Rapid Rectilinear Lens.

[From Photography.]

PHOTOGRAPHY IN RELATION TO PAINTING.

BY ARTHUR BURCHETT.

[Read before the Edinburgh Convention.]

IN commencing this paper on "Photography in Relation to Painting," I feel that I cannot do better than give the definition of both painting and photography.

Painting is a representation of objects on a flat surface, painted by the hand by means of brush, pencil, or other tool being under the will of the artist, unrestricted in fancy, subject, color, form, place or period.

Photography is a representation of objects on a flat surface, restricted to the absolute reality of form present, as rendered by the lens on the sensitive plate in the camera, being only under the control of the photographer in development and in choice of subject, form, place, focus, and length of exposure, and, in some few cases, light and shade.

Such being the definitions of painting and photography, we can now see how very limited are our resources in photography, compared with painting, for producing a picture that shall have qualities that give it an art value, for it is not a mere transcript of nature that we require, but a picture containing some sentiment or idea that shall give pleasure to those who see it, and in Nature there is in both figure and landscape an endless wealth of beauty that we can render, if we see Nature with the knowledge of what the camera will do and what it will not do.

Photography being limited to reproducing the objects present without color (which in painting is often its chief charm), we must, therefore, find out how near photography approaches painting by comparing reproductions of paintings with the work of the lens. Unfortunately, photography is severely handicapped by the inability of the sensitive plate to render the true tone value of all colors, and this inability adds very much to the difficulty we have in judging Nature as she is represented in the photograph and in painting; but even with this defect the result in photography is very close to the true rendering of Nature, and will be even more so in time as photography advances. I need not point out the defects of photography with regard to rendering color into black and white, for we all know them. In painting, certain colors have a different tone value to some artists than to others, and, when their pictures are rendered into black and white, fail to recognize the likeness of effect to that of the painting.

Both in photography and painting we have to consider in the construction of the picture, the possibilities of its being a success, its story, composition, light and shade, and all the various items that make its being. A painting or photograph must have some reason for existing, some object or story, and this must be the one thing that all else is to be subservient to. In a picture the artist tries all he can do to keep your attention fixed on his principal figure or object, and to do this keeps all his what we call "focus" on it, and all else is kept down both in tone and sharpness, so that the eye shall not wander away and become confused by the surroundings. Many pictures and photographs are spoilt by the want of concentration of interest, simply by forgetting this simple rule, in painting by over-elaboration of unimportant objects, brilliant color or strength which kills the principal object in the picture; in photography by microscopic focus, which puts everything on an equality with the principal object, accentuating things that are unseen by the eye, for the eye sees the thing that is, not what it is made of, a tree is made of many leaves, branches, etc., but the eye sees them as a mass of foliage, not as individual items.

Many pictures are spoilt by want of contrast of light and shade, for it is a well-known rule in art (and art applies to photography as much as painting), that except in exceptional circumstances there shall be no accessory object lighter than the principal object of the picture, or if that is a dark, darker than this object. In this was the secret of the great success of the old Flemish artists, Rubens, Vandyke, Rembrandt, etc. Both photographers and artists cannot do better than carefully study the way in which these masters have managed the light and shade, both in portraiture, figure and landscape.

The next thing to consider is the composition or arrangement of the figures or objects that constitute the picture or photograph. In painting, this is comparatively easy, as the artist can place his figures where he pleases, and use any kind of composition. But the photographer is entirely limited to a more or less equal plane of focus, owing to the distortion the lens gives in figure subjects, for what is simple foreshortening in painting often becomes absolute distortion in photography.

Composition not only applies to the arrangement of the figures, but also to the light and shade, which must be so managed that it gives value to the lines of the figures, and in figure and landscape pictures so combine them that they become as a whole. With pure landscape photography composition is impossible, as you cannot arrange your objects; you can only select a view, and can only use the knowledge of composition to help you to choose the best view. In landscape and figure pictures very much can be done in photography, but you are limited to simple arrangement in a selected landscape, which has to be taken just as it is, and which in painting would be so altered and arranged that it would carry the lines of the composition in harmony with the figures.

Light and shade in landscape, which are so important in painting, are quite as important in photography, but here again we cannot arrange like the artist, but are quite dependent upon the effect at the time of exposure which can sometimes be chosen. It is a very great misfortune that photography will not render the true effect of cloud and sky combined with landscape, for until this is possible we must depend upon the sky from another negative, which more often than not is entirely unsuited to the landscape, and also is, as a rule, printed far too heavy.

In painting, besides the great charm of color, the artist has one which is perhaps greater, that is, "Ideality," or the rendering of the image of the mind as opposed to the reality. Idealism in painting often merges into mannerism. There are many living instances of this, the weary repetitions of the same form and the same effect. In photography the danger of mannerism is greater, as if we use the same stop to the same lens and the same printing method, our photos must necessarily look more or less alike, only the difference of form. I suppose it will always be so, at least, with the majority of workers who only have one lens. Painting is very much like hand-

writing, one can recognize the author, but photography changes in character with every different kind of lens, so that it ought to be possible to escape from the more glaring faults of mannerism.

Impressionism must not be confounded with idealism, for impressionism is the rendering of the way the objects or scene appeal to you, how you see it; whereas, idealism is the correcting or altering nature to suit what you consider true beauty.

Impressionism in photography is not only possible to a very large extent, but the results are very beautiful, and do depend in very large measure on the artistic aptitude of the photographer and the knowledge of his lens, and though, to those who are unable to see the beauties of nature (and they are legion), it may appear entirely chance work, yet those who, using knowledge both of nature and photography, know that the results are precisely those that were aimed at.

And now we come to what is considered to be the great strength of photography—its imitation of form. In painting it is often color that expresses form, such as grass, sand and many other things. There the color tells what it is, and the mind is satisfied, but in photography, unless there is a sufficient indication of form, the representation is vague and leaves the mind wondering and unsatisfied; it is therefore necessary to the proper understanding of a scene or object that the definition of form shall be such that the objects are recognizable, but how far it should be carried is entirely a matter of individual feeling, for, as in the case of idealism, the perception of form is in the mind; to one person form is soft and without line; to another, the feeling of form is so strong that he can only express himself by sharp outlines; it is only a matter of thought, for in Nature there are no outlines. The impression of Nature is to me a soft blending of color and tones quite unlike the rendering given by what is termed "a nice sharp photo." One of the great difficulties both painters and photographers have, is the introduction of figures into landscape so that they shall not intrude or attract the eye from the motive of the picture. As a rule, we find in the best landscape pictures, that if a figure is introduced it is placed in the middle distance, and is used more to serve as a known size to give grandeur to the landscape. Turner was a master at this, and though he defied this method in some of his pictures by placing the figures in the immediate foreground, yet he did it so well that they appear away from where the spectator stands, and therefore practically in what is the middle distance. Of late years it has become more the fashion to introduce figures in the foreground, so as to give a title to the picture, but it is very difficult to do so without sacrificing the landscape to the figures. Of course, these remarks do not apply in the case of what are called "figure and landscape subjects," for there the figure is the important object and the landscape only accessory.

I am afraid that my paper will not be considered complete unless I make a few remarks on motion, as rendered by the camera and by the artist. I know that it is dangerous ground to tread upon, but I must need venture. In the expression of movement in painting, the artist does not endeavor, like the photographer, to obtain a perfectly still look or an action that he cannot see, but such an action that shall express the characteristics of the movement he wishes to represent, whether it be running, leaping, falling, etc., and obtains that look of movement, not only by the position of the figure, but also by means of flying drapery. Now, in pictures by many of the great masters, this drapery is painted in indistinct folds, purposely to give the effect of movement. There is a very fine instance in the National Gallery, London, "St. George and the Dragon" (by Tintoretto), perhaps the finest example of movement ever painted. To say that movement must be expressed by movement expresses what I wish you to understand. In this picture not only do the figures seem to be moving, but the drapery vibrates; but still it has not the same kind of look that photography gives of the blur of movement, but is of a character that I am afraid photography can never imitate. Another instance of the rendering of movement is Vandyke's drawings of the condemned being cast into hell. The mass of humanity seem to fall headlong. The

effect of movement is indescribably true. When an artist looks at an instantaneous photograph of the movement of a figure, the chances are that he has never even dreamt of that representation being what it is intended to represent. The very fact of its being a perfectly arrested action, takes away all sense of movement and makes it only a pose. In landscape the expression of movement cannot be expressed by a perfectly sharp image. How often one hears the remark, "This is not good, as the trees have moved." Yet to an artist it is often the best quality that photo possesses. Turner, the great master of movement, always got the effect of wind in his trees, waves and sky by indistinctness of detail.

Sea and sky in photography are often perfectly representatives of movement. One need only see one of Dresser's seascapes to acknowledge this, but there are many other photographers who only give the arrested motion, the stillness of death, for it has the form but not the breath of life.

The imitation of Nature should be in photography what artists have endeavored in all ages to paint—that is, the life of Nature, not as a still, sharp, microscopic image (for the time is past when we were content with seeing Nature under this false light), but as a representation of life as seen by the eye; for what is false to the eye cannot appeal to the mind. It may be a perfect photo, as far as exposure, development and printing can make it, but unless it has that something which truly represents the life of Nature, it is worthless in an artistic sense.

[From the British Journal of Photography.]

DO NEGATIVES LOSE DENSITY IN FIXING?

IT may be remembered that some months ago an esteemed correspondent, Mr. Albert Levy, of Paris, favored us with a communication, in which he implied that the density of a developed gelatine negative suffered reduction in the hypo fixing bath. Applied in this connection, the term "reduction of density" would, in its ordinary acceptation, be held to have a purely comparative meaning, since it must be obvious that, in gauging the density of an unfixed negative by the artificial illumination of the darkroom, the influence of a substratum of unaltered salt in the plate converts the point into one of individual judgment, which, as the resulting negative too often shows, is as liable to be fallacious as not. There is no respect, indeed, in which both beginner and proficient are so likely to trip as in deciding when the negative has reached proper printing density, to which circumstance we are inclined to trace a not infrequent necessity for an intensification or strengthening of the image, which is often ascribed to other causes.

The burden of our correspondent's contention, however, was, not that there was an apparent reduction due to an optical deception, but that in reality the actual density of the developed image underwent diminution in the fixing bath, and we therefore endeavored to demolish the theory that any reduction took place, supporting our argument by such evidence to the contrary as instantly appeals to the mind when the feasibility of the phenomenon is briefly considered. Our conclusion was that the loss in question might be due either to under-development or under-exposure, or both in combination, the apparent density of the image being influenced to a great extent by the color or consistency of the original film.

We observe that the subject of this assumed loss of density came under discussion at a recent meeting at one of the London photographic societies, and, from what was said on the occasion in question, we are induced to suppose that there is a more or less general belief that a real reduction of developed density does take place in the fixing bath.

On practical as well as theoretical grounds we have no hesitation in meeting the proposition in a spirit of scepticism. We say now, as we said before, that in imputing this reducing property to the fixing bath the latter is assumed to have the power, at a

normal strength and for a normal time, of dissolving out the metallic silver of a developed gelatine negative to a material extent. Such a conclusion has, to our knowledge, never been practically demonstrated or maintained.

But why is this reduction of density assumed to be confined to the negative? If it takes place in that case, are not lantern slides and transparencies equally liable to loss? What, too, of developed gelatino-bromide prints, of printed-out emulsion papers? If density of deposit—not mere apparent density, mind, which is another thing, and not, of course, what is meant—is reduced in negatives by the fixing bath, it is equally at the mercy of hypo in the other cases we have cited; but, so far, we are without any data to warrant the assumption that it has ever been noticed or experienced.

Confining ourselves to the question of negatives, however, the conclusion forced upon us from a consideration of the point is, that whatever reduction takes place is apparent and not real. On the previous occasion we drew attention to the circumstance that the presence of iodide in the film renders it more opaque, so that it is easy to conceive how, in development, a backing of bromo-iodide of silver, being presumably of a deeper color than pure bromide, would conduce to an appearance of greater density of the image than where the sensitive compound was confined to the latter salt alone. We have hinted advisedly that silver bromo-iodide is only presumably yellow, as compared with pure bromide alone; for it is, we believe, known to experimentalists and others that the latter salt occasionally assumes, in an emulsion, a yellowish tinge, which renders it indistinguishable, even to the experienced eye, from silver iodide.

Other causes, in addition to the foregoing, may lead the incautious to generalize too hastily over the supposed evanishment of developed density. Among these we select inconstancy or irregularity of darkroom illumination. If the light be comparatively weak, either from the employment of a small flame or too dark a tint of non-actinic material, the density of a negative is liable to be overestimated, especially if the operator is usually, or even occasionally, accustomed to work by a less-subdued light. Over-exposure is an obvious trap in mistaking density, especially in a weak light, and, coming from the general to the particular, different makes and rapidities of plates vary so greatly, both in color as well as thickness of coating, that, even where one is working by an invariable illuminant, the imagination is easily seduced into an erroneous comparative estimation of density. This leads us here briefly to lay stress on the value of uniformity of darkroom illumination on the score indicated, as well as on that of others.

A discolored developer is by no means a negligible factor in the creation of false impressions as to density, and another thing which facilitates, although, of course, only slightly, the optical deception is the fact that the film is wet. In point of fact, a wet negative appears denser than a dry one. But the main cause of the illusion is, of course, the colorific property of the unaltered salt. On the last occasion when we treated of this interesting point, we remember fixing the half of a negative (leaving the other half unfixed) that had been taken on a slow plate, which we knew contained a comparatively large quantity of iodide. Upon examining the plate by ruby light, the difference in apparent density was enormous, and the same disparity was maintained against a naked gas flame.

But the example we cite was one of apparent reduction only, and under that head, we are convinced, come all those cases where loss of density is complained of. No such loss, we submit, actually takes place—unless, perchance, we have all along existed in dark ignorance as to the action of alkaline developers on the exposed silver haloids in gelatine, and have deprived dilute hypo of a right to be considered, with nitric acid, a solvent of metallic silver.

All communications for the columns of the BULLETIN should reach us on Monday preceding the day of issue, to insure their publication at that time.

[From *British Journal of Photography*.]

PLATINUM AND PLATINUM RESIDUES.

NEW developments of probably the most stable of all photographic printing processes naturally lead to the dissemination of an increased amount of interest as to the available sources of supply of metallic platinum, and, in response to a suggestion recently made to us with that object, we here indicate the region from which, notwithstanding the frequent reports alleging the discovery of platinum in Australia and other parts of the globe, the supply of the metal for the various uses to which it is now placed is principally derived.

The platinum beds of the Ural Mountains, according to a foreign contemporary, are the only ones in the world in which the metal is found in grains. Platinum is found in Brazil and in the Cordilleras in the hard serpentine rocks, but never in the form of grains. The platinum beds of the Ural Mountains are found in various districts. The platinum found in these places is in the form of grains, in sand frequently containing gold. The weight of the grains is from 17 to 21 grams to every 1,640 kilograms of sand. The richness of the platinum beds varies in the same proportions. In some, the thickness of the turf covering the sand does not exceed from 2.16 metres to 2.88 metres; while in others it varies from 10.80 metres to 14 metres, so that it becomes necessary to work underground. The thickness of the platinum sands does not vary much. A noticeable characteristic of it is that they are found in the form of friable grit, and easily washable. The clayey sand is rarely met with.

The demand for platinum for industrial purposes is relatively restricted, as it only dates from the last twelve or fifteen years. It is, of course, as our readers are aware, largely used for electric lighting and dynamo conductors, and considerable quantities of it are employed for photographic and chemical purposes generally. During the last twelve years the annual production of platinum has averaged about 3,194 kilograms, of which half has been derived from the beds in the north of the Ural Mountains, belonging either to the State or to private persons.

Throughout the whole world only about 3,270 kilograms of platinum are annually used; but it is anticipated that this amount will soon be considerably increased, and it is stated that the platinum beds of Bisserski can alone supply the total quantity required for the consumption of the world. When the demand for platinum was insignificant and the price very low, the gold miners who found platinum while seeking gold frequently, it is stated, used the former, instead of lead, as shot for firing at wild birds.

Although the consumption of platinum in photography is small compared with the extent to which it is used in other arts and industries, its characteristic fluctuations in price give it something more than a sentimental interest to photographers, who on at least one occasion have had cause to deplore its temporary scarcity by an increased price of the salt employed in the production of the platinum image.

Where a large quantity of platinum paper is used it is apparent that great importance is to be attached to the recovery of the metallic platinum contained in the unaltered salt, associated with the sensitive iron compound, which is applied to both the old commercial hot and modern cold-bath platinum printing surfaces. Indeed, it will be evident that spent oxalate developing solutions must carry down with them a considerable quantity of platinum, and hence its recovery should not by any means be neglected.

In our present number a correspondent from a distant part of the globe who, it appears, has been accustomed to work platinotype printing on rather a large scale, asks us to give a method for recovering the platinum from old developing solutions. The process is simple enough, and in describing it here we have little doubt that it will do a service to the others.

The vessel containing the accumulations of the old developers is heated until the liquid reaches a temperature of about 180 degrees Fahr., a saturated solution of fer-

rous sulphate in the proportion of 1 part to 4 of the oxalate solution being then added to it. Precipitation of a dark substance immediately takes place; this is finely divided metallic platinum. When the precipitate has settled, the supernatant liquid is drawn off, and the precipitate, after being washed, is ready, either for conversion into chloro-platinite or for transmission to the refiner. Probably, the latter is the preferable plan.

Of the quantity of platinum salt with which platinotype paper is coated, it has been estimated that far from all of it is taken to form the image, so that the wisdom of saving the developing solutions is manifest. The acid clearing solutions, however, only carry over but an infinitesimal proportion of the platinum salt, so that their preservation for the purposes of recovery would be futile.

[From *Photographic Work*.]

ALUMINIUM FOR THE FLASH-LIGHT.

HOW TO WORK WITH IT.

EXPERIMENTALISTS in photography are now beginning to realize the considerable advantages of aluminium over magnesium, but certain writers—and writers very often are not also experimentalists—persist remarkably in saying that aluminium will not burn, and that the aluminium flash-light is a myth.

Only last week a technical newspaper, which is now more remarkable for change than for anything else, contains the following:—"We wonder who was responsible for the origin of the statement that aluminium will do as well as magnesium for flash-light purposes. Those who have tried the two metals know very well that the statement is quite erroneous; nevertheless, it continues to be repeated over and over again, especially in foreign journals. In a recent French publication, the statement is once more given, accompanied by aggravating details which are equally incorrect."

The above-quoted paragraph appears especially remarkable when one recalls the fact that about three years ago the same periodical—if, indeed, identity in name is to be regarded as identity in fact—published the first example of aluminium flash-light photography given to the public, and details were given as to how the work was done.

The special economy of the aluminium flash-light does not depend only on the low price of aluminium as compared with magnesium, but also on the circumstances that a much smaller quantity of aluminium will suffice, and that the aluminium is scarcely subject to oxidize and become useless when stored away. Indeed, surveying and other instruments made of aluminium, even when constantly used in damp mines, do not require the protective coating of lacquer which is essential in the case of brass instruments.

The smallness of the quantity of metal required has another considerable advantage, as a correspondingly small quantity of the white oxide is formed, and distributed in cloud-like form in the atmosphere.

The photograph referred to as having been published about three years ago was taken by the light of less than half a grain of aluminium, three leaves of the metal beaten fine, like gold leaf, being used; but of the three leaves, which together weighed half a grain, only two burned, the third being shown in the photograph as unburned and at the bottom of the jar. We may mention that the photograph in question was taken during one lecture of a course on artificial lighting which Mr. T. Bolas gave, in the early part of 1889, at the Central Institution of the City Guilds, in Exhibition Road; and the photograph was made on this occasion by Mr. W. E. Debenham. Soon after this, considerable attention was given to lighting by the flame of burning aluminium; and the use of the aluminium flash has been much extended by the introduction of fine aluminium dust under the name of aluminium bronze powder, together with the recent manufacture of aluminium leaf on a large scale.

The metal aluminium is far less readily oxidizable than magnesium; indeed, aluminium can be heated to redness in the open air without appreciable oxidation, and melted aluminium can be heated even to a moderate white heat without showing more than a trace of tarnish on its surface. But in making clear the conditions under which it burns, we feel that an apology is almost due to our readers for setting forth—as we are about to do—some of those elementary facts regarding combustion which are known to every attentive school boy who receives rudimentary instruction in chemistry. Our excuse must rest on the fact that such misinformation as that we have just quoted is occasionally put forward in unexpected places.

As an experiment on the conditions of combustion, let the reader hold a bar of iron—such as a key—in the flame of a spirit lamp, Bunsen burner, or even a candle. Although the temperature of the flame is considerably above the igniting or kindling point of the iron, the iron does not burn, because the mass of it conducts away the heat so rapidly that the metal fails to reach the required temperature for igniting or kindling; this temperature being, in the case of iron, a moderate white heat. If, now, instead of putting a large piece of iron in the flame, the piece of iron is so small that it becomes very rapidly heated to the kindling point, the iron will burn. This can be readily seen if iron filings are dusted into the flame, or if a piece of iron is filed while held in the flame. If a similar experiment be made with aluminium, it will at once be seen that it kindles far less readily than iron, and if the finest filings which can be prepared are dusted through the flame, only very few of the more minute particles kindle and burn with the characteristically intense flame of this metal; but if the finest aluminium bronze powder is projected through a flame, the metal becomes sufficiently heated for the greater part of the aluminium to burn.

Although a round magnesium wire of as large a diameter as one-thirtieth of an inch can be made to burn readily enough if held in a spirit-lamp flame, a similar wire of aluminium can only be ignited with difficulty by a powerful blow-pipe, or in the oxyhydrogen flame; and even a band or strip of aluminium one five-hundredths of an inch thick and one-eighth of an inch wide can only be ignited and maintained in combustion with similar difficulty. It is, however, when the aluminium is beaten very thin, or finely divided, like bronze powder, that it can readily be made to burn, and its value, at present, is more especially for producing the flash-light.

The aluminium leaf which was used in producing the flash-light at the lecture referred to as having been delivered in the early part of 1889 was beaten out thin, and, like gold leaf, the material was sold for decorative purposes. A measurement of the thickness of some of the leaves in one of the books showed it to be about one five-thousandths of an inch, or about forty times the thickness of gold leaf. This material, when held in a flame, takes fire and burns with a brilliant flash, but the combustion is generally incomplete. Aluminium bronze powder of similar fineness—that is to say, formed of scales about one five-thousandths of an inch thick—flashes like magnesium when blown through a flame, but, unless certain precautions are taken, a portion escapes combustion.

In therefore passing on to the practical use of the aluminium flash-light, we will first go back to our German correspondence of July 15th (page 124), and afterwards give details for the use of the aluminium leaf in flash-light work.

The potassium chlorate intended for mixing with aluminium dust (aluminium bronze powder) should be quite free from the deliquescent potassium chloride, as, if this salt is present, the chlorate will tend to be moist. To test for chloride, a little of the chlorate should be dissolved in water, and a few drops of solution of nitrate of silver added, when a white precipitate will indicate the presence of chloride. It is also important that the chlorate of potassium should be well dried and finely powdered, and if, after powdering, it is passed through a sieve of eighty meshes to the inch, all the better.

If these precautions are taken, the simple flash mixture recommended by our

correspondent will burn much more rapidly than stated; but we may mention, in passing, that the aluminium and the powdered chlorate should not be mixed in a mortar, but with a flat blade on a sheet of paper.

The proportion, 1,230 parts and 546 parts, may be simplified as follows:

| | |
|-------------------------|-----------|
| Aluminium..... | 1 part. |
| Potassium chlorate..... | 2½ parts. |

For the most rapid flashes, the addition of sulphide of antimony must be made, the following being a simplification of the formula given a fortnight ago:

| | |
|---------------------------|----------|
| Sulphide of antimony..... | 3 parts. |
| Aluminium..... | 5 " |
| Potassium chlorate..... | 15 " |

It is, however, by the combustion of the aluminium leaf in oxygen gas that the brightest and best flash-light is to be obtained with aluminium; and, moreover, this method is specially to be recommended when photographs are to be taken in confined interiors—mines, for example.

The method is to place a few leaves of aluminium in a dry bottle containing oxygen gas, and on applying a lighted taper to the topmost leaf, the contents of the bottle will burn with a flash, which, for intense brightness and photo-chemical power, far exceeds anything obtainable with an equal weight of magnesium.

The chemical student may tell us that 27 grams of aluminium will require about 33 liters of oxygen for complete combustion; but in estimating the amount of oxygen which it is desirable to use, this ratio will not be much guide. A tall glass jar holding about a pint and a half, and having a ground mouth, which can be closed with a glass plate, is very convenient for containing the oxygen, and seven or eight leaves of aluminium placed loosely in this can be easily placed as to pile up to the top of the jar, so that one shall be readily available for lighting with a taper.

A convenient way of working is to lead oxygen to the bottom of the jar by means of a thin glass tube connected with an iron bottle of compressed oxygen, and if the stream of gas is slow, and the jar stands with the mouth upwards, it will soon become sufficiently filled with oxygen by displacement. While the slow stream of gas is flowing through the jar, the leaves of aluminium are placed in position, and the light is applied.

Those who have used magnesium, whether in the form of wire, or as powder, know how prone it is to oxidize or tarnish, a white crust of magnesium being formed. This incrustation often causes the wire to burn unsteadily, and careful users of magnesium wire often clean the wire before burning it. The magnesium powder oxidizes rather rapidly, and it would be quite impracticable to preserve magnesium of such fineness as the aluminium dust as we mentioned, even if carefully kept in a bottle. Aluminium dust or leaf, on the other hand, retains its lustre if fully exposed to the air, and, during the past year or two, aluminium leaf has been largely used for decorative purposes. The probability is that the simple blow-through aluminium flash with the fine aluminium dust will soon come into very general use, although in order to ensure the thorough burning of the whole charge of aluminium it is desirable to use a form of lamp in which the metallic dust is projected together with the combustible vapors, or in which oxygen is used. The introduction of the fine aluminium dust opens a way for the construction of a continuous action lamp, in which air or oxygen carries the dust forward in a constant stream.

A GREAT MAN.—Winnie—"How nicely your trunk is packed! Did you pack it yourself?"

Mrs. Newed—"Oh, no; John packed it for me."

Winnie—"How funny! I didn't know men could do such things."

Mrs. Newed (proudly)—"My husband can; he has even told me that he packed a Primary once."—*Smith, Gray & Co.'s Monthly*.

ON THE SPECTRUM SENSITIVENESS OF HALOID SALTS OF SILVER.

BY CAPT. W. DE W. ABNEY.

IN a study of the sensitiveness of the different salts of silver, conclusions from spectrum analysis are arrived at sometimes which are misleading, unless every cause of error is eliminated. Many statements have been made, for instance, regarding the sensitiveness of silver iodide to the different rays, some of which might be considered to be wide of the truth, though in reality they have a foundation. It has by some been asserted that silver iodide is sensitive to the red rays, and experiments which seem conclusive that such is the case have been quoted to prove it, though when these experiments have been weighed in the balance they will be found wanting. It was a description of such experiments which led the writer to investigate the matter, and to repeat them in order to ascertain the truth of the deductions made. The repetition showed that no error had crept in which would at first be recognized as an error, though when the conditions had been changed there was no doubt that the original conclusions drawn were open to more than doubt. If we expose a plate with pure iodide in a bright spectrum, there is no doubt that with prolonged exposure the red rays do impress themselves, and that in a marked degree. This, at first sight, seemed to be contrary to what had been written on the subject, and is puzzling, for we know that an iodide plate may be exposed with immunity from fog in the full light coming through a stained red glass. The results of spectrum analysis and common practice appear to be at variance with one another, and yet this cannot be so in reality. In some investigations on reversal a clue was found to this discrepancy. If an iodide plate be slightly exposed to white light previous to being placed in the spectrum, from which all but the red rays have been eliminated (and this can be secured by placing in front of the slit of iodine dissolved in an aqueous solution of potassium iodide), it will be found that these red rays do impress themselves on the plate. Further, if a plate has not received this preliminary impact of white light, it may be exposed for an unlimited time without any appearance of reduction by these same rays. If we take a similarly unexposed plate and place it in the spectrum in which every color is allowed to act, the red rays will again impress themselves. This last is the condition which is generally existent where experiments have been made. The first two experiments indicate where the error of attributing sensitiveness of iodide to the red has crept in. A spectrum is theoretically composed of pure monochromatic colors at different parts, and they are practically pure for ordinary purposes; but they are not so where long exposures are in question. This impurity in the spectrum was brought to the writer's knowledge in a very forcible manner recently, while he was determining the amount of diminution in the intensity of a ray which could be given in order to make that ray invisible to the eye. The extinction of the different parts of the spectrum is most readily effected in the red, and with most difficulty in the green-blue. Now, it was found that the extinction in the red was much more difficult when the whole spectrum was used than when the light was filtered through red glass placed in front of the slit. The intensity had, in fact, to be reduced many times less when the red screen was in front of the slit than when it was absent, and this difference was in no way accounted for by the difference in the intensities of the rays coming through the red glass and without it. It was eventually found that it was a slight admixture of a white light with the red when the naked spectrum was used which caused these rays to be less readily extinguished. The small modicum of white light contained the blue-green rays, of course, and it was these which were really extinguished, and not the red, which had, in fact, disappeared long before the small quantity of blue-green could be extinguished. Two questions presented themselves. One was, could the white light be seen and extracted? and the other was, whence did the white light come? If a narrow slit, say $\frac{1}{8}$ th of an inch, be placed in the image of

the spectrum so that one ray which is considered to be pure issues through it, a prism when placed in its path, if there be any faint admixture of white light with it, the color will show on a screen placed in the path of the beam as a bright line of light, but lying in the middle of a faint spectrum. When a red ray is treated in this manner this is exactly what occurs, showing that white light is mixed with it, and, in fact, any ray will show exactly the same admixture, indicating that it is not one particular color which is thus contaminated. If a damp or greasy hand be passed over the prism of the spectroscopic apparatus (not the second prism, be it remembered, which is placed in the line of the beam as it issues out of the slit placed in the spectrum) it will be found that the faint spectrum of white light is increased in brightness, and that if the prism be dewed that it becomes very bright, while, if the surfaces are very polished, it becomes fainter. Evidently, the answer to the second question is, that the white light is due to the prism itself. A theoretically perfect prism would be quite transparent, and, in fact, would be invisible; but we know that this is not the case, and, therefore, perforce, the prism itself becomes a source of white light, and this is mixed with the spectrum. Reflections of the spectrum from the plate on to the spectrum camera, and back again on to another portion of the plate, also help to make matters worse. We now see how it is that the silver iodide becomes sensitive to the red in the spectrum. It was said that when the plate had a preliminary exposure it was sure to be found so, and in the case of an ordinary exposure we have red of strong intensity mixed with white of a feeble intensity acting together, which, however, with prolonged exposure, will be sufficient to cause a fog on the part of the plate where the red light falls. We are thus driven to the conclusion that an iodide plate which is slightly acted upon by white becomes sensitive to the red. That is to say, that the salt has a different spectrum value when slightly reduced by the blue of the spectrum. This is not the only case of a haloid salt after preliminary exposure becoming sensitive to rays to which it is otherwise insensitive. Chloride of silver is really when pure only sensitive to the violet and ultra-violet, yet if it be darkened by light and it be given a long exposure in the spectrum, every ray will impress itself on it down to the infra-red. This question of sensitizing for this part of the spectrum is one of importance in many investigations, and can only be accounted for by the fact that its absorptive properties are different. Silver chloride becomes bluish, and hence absorption of the red rays takes place, and we know that, when absorption does take place, work of some kind is performed in the body. In the case of the silver chloride, the work is evidently chemical action of some kind, and is not the ordinary reduction to the sub-chloride, which is effected by the violet rays of the spectrum. The sensitiveness of bromide is also increased in spectrum value by a slight preliminary exposure, though it is not necessary to give this to make it capable of being improved by the red rays when proper precautions are taken—for we have a molecular form, in which it is reduced to a developable state (sub-bromide) by these same rays.

It appears, then, that, in every spectrum investigation, due regard must be paid to the fact of this small admixture of white light with the spectrum color, in order to avoid falling into errors. It may be remarked that no matter what contrivance be employed for producing the spectrum, this same result must be looked for. A diffraction grating, forming a spectrum by transmission or by reflection, is open to the same admixture, and with a reflection grating there is considerably more impurity than with good prisms. The ruling on the metallic surface scatters light in all directions, and it is no uncommon thing to see the violet ends of the first-order spectra joining the central colorless image of the slit (which must exist) with a band of white light.

To conclude, it may be stated that silver iodide, so far as the writer has tried it, is absolutely unaffected by any rays, other than by the ultra-violet and violet part of the spectrum, if it has had no white light acting on it, either before or during exposure.

THE PHOTOGRAPHIC SOCIETY'S STANDARDS.

[The following is reprinted from the Society's Journal.]

THE Standards adopted by the Society in 1881 have been carefully reconsidered to see what additions or modifications were desirable.

The following statement is complete so far as the subjects it deals with are concerned :

LENS DIAPHRAGMS.

It is recommended—

1st. That the aperture of the standard-unit diaphragm have a diameter equal to one-fourth the equivalent focal length of the lens.

2d. That diaphragms with smaller openings have apertures diminishing in area to the extent of one-half from the unit standard downwards.

3d. That every diaphragm be marked with its intensity ratio, and also with the relation that the diameter of its aperture bears to the equivalent focal length of the lens, thus :

$$1 \frac{f}{4}; 2 \frac{f}{5.6}; 4 \frac{f}{8}; 8 \frac{f}{11.3}; 16 \frac{f}{16}; 32 \frac{f}{22.6}; 64 \frac{f}{32}; 128 \frac{f}{45.2}; 256 \frac{f}{64}, \text{ etc.}$$

Should a lens not admit of a diaphragm with an aperture as large in diameter as one-fourth its focal length, nor exactly any one of the above-mentioned sizes, it is still recommended that all the apertures be made in uniformity with the above scale, with the exception of the largest, which should be marked with the number its area requires in relation to the unit diaphragm. In the case of a lens having a working aperture exceeding in diameter one-fourth its focal length, the diaphragms should be marked according to the sizes of their relative apertures, for example :

$$0.5 \frac{f}{2.8}; 0.25 \frac{f}{2}, \text{ etc.}$$

And diaphragms which require to be made with apertures intermediate to the standard sizes should be marked in a corresponding manner.

LENS MOUNTS AND FITTINGS.

It is recommended—

1st. That the equivalent focal length of each lens be engraved upon its mount.

2d. That the following series of screws for photographic lens flange fittings be adopted :

| Diameter in Inches. | No. of Threads per Inch. | Core Diameter in Inches. |
|-----------------------------------|--------------------------|--------------------------|
| 1 | 24 | .9466 |
| 1.25 | 24 | 1.1966 |
| 1.5 | 24 | 1.4466 |
| 1.75 | 24 | 1.6966 |
| 2 | 24 | 1.9466 |
| 2.25 | 24 | 2.1966 |
| 2.5 | 24 | 2.4466 |
| 3 | 24 | 2.9466 |
| 3.5 | 12 | 3.3933 |
| 4 | 12 | 3.8933 |
| 5 | 12 | 4.8933 |
| And upwards, advancing by inches. | 12 | |

The form of thread is that known as Whitworth's Angular Thread, and is designed as follows: Two parallel lines, at a distance apart equal to 0.96 of the screw

pitch, are intersected by lines inclined to each other at 55 degrees. One-sixth of the vertical height of the triangular spaces so obtained is rounded off both at the top and bottom. The depth of this thread is 0.64 of the screw pitch.

3d. That every flange and adapter have a mark upon its front to indicate the position of the diaphragm slot or index of any lens when screwed home. The mark on any adapter should coincide with the mark upon any flange into which it is screwed. This mark should be placed at the point at which the thread becomes complete at the shoulder of the flange or adapter.

CAMERA SCREWS.

It is recommended—

That all screws fitted to cameras, either for attachment to the stand, for fixing rising fronts, or for other movable parts, be either $\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$, or $\frac{3}{8}$ of an inch in external diameter, and in pitch of thread and other details in accordance with the generally recognized Whitworth standards for these sizes.



[From The Photographic News.]

AMIDOL.

THIS new developer is reported upon by a well-known and constant contributor to the *Photographic News*, in the person of Mr. J. Spiller, F. I. C., F. C. S., who writes of it as follows :

"I have now made a considerable number of experiments with the two new developers, and reserving the metol for future report, I may say at once that the amidol, as tried upon six different qualities of commercial plates, has given me eminently satisfactory results.

"It is easy of application, and possesses special properties which will recommend it to the notice both of professional and amateur photographers.

"The fact that it can be used in a sulphite solution alone, without any admixture of free alkali, is an important consideration in its favor; and, thus dissolved, it is sufficiently permanent to serve as a one-solution developer, being diluted for use with three or four times its bulk of water immediately before employment. The stock solution, in concentrated form, was made up, according to the instructions, as follows :

| | |
|---------------------------------|--------------|
| Distilled water | 1,000 parts. |
| - Sodium sulphite crystals..... | 200 " |
| Amidol..... | 20 " |

further diluted, as already stated, and used with a small proportion of potassium bromide as a restrainer. The images can be made to appear with any required speed, and the density modified, merely by altering the strength of the developer; the resulting negatives seem uniformly clear and brilliant without any trace of fog. Tourists especially would find it most convenient for general use; but they should be advised to carry always with them a small supply of potassium bromide in crystals, so as to be ready for all emergencies.

"I cannot speak too highly in praise of amidol as a developer, for with it the operator has his process completely under control. I find, moreover, that it is quite easy to develop many plates in succession with the same solution, which is not the case with pyrogallol."

As we have already stated, amidol is being introduced into this country by Messrs. Fuerst, of 17 Philpot Lane, who have sent us the following opinion of its merits by Mr. G. L. Addenbroke, who writes: "In accordance with your desire I have tried a number of experiments with the two developing agents, amidol and metol, and the results are satisfactory in both cases. The former makes a very interesting developer, and one which possesses decidedly original qualities; it is very soluble in water, and as strong a solution as 10 per cent. can easily be made, which is a very important

advantage. I have tried it in various ways as a developer, but on the whole find the formula recommended the most convenient, viz.:

| | |
|-------------------------------|--------------|
| Water..... | 1,000 parts. |
| Sodium sulphite crystals..... | 200 " |
| Amidol..... | 20 " |

"This forms a concentrated developer which, diluted with three or four parts of water, works well with different kinds of plates. Its action is decidedly rapid, and, to restrain this and keep the shadows perfectly clear, the addition of a little potassium bromide is desirable, the proportions naturally varying with the character of the plate; from three or four drops, however, of a 10 per cent. solution to the ounce of developer is a fair average with a normal exposure. Full printing density is attained in from three to four minutes. With thinly coated plates it is advisable to wait until the action of the developer is strongly apparent at the back of the plate; but if the film is a thick one, the image need only just appear through. After fixation, the deposit is of a good black color, inclining to a greenish tinge as the proportion of bromide is increased; the shadows remain quite clear, and the film perfectly free from stains.

"The conclusion I have come to is that amidol is simple and certain in its action, and capable in the hands of an efficient operator of producing the highest class of work; while the ease with which it is prepared and used makes it very suitable for amateurs, to whom a single-solution developer, keeping well, offers many advantages. I may say that amidol is an excellent developer for gelatino-bromide prints, giving vigorous images of good color without staining the paper.

[From *British Journal of Photography*.]

LIGHTING AND EXPRESSION.

(Continued.)

CLOSELY associated with lighting is expression. This may seem a term not altogether applicable to landscape work; nevertheless, expression is found in all things, animate and inanimate. A tree or a plant may assume a graceful or ungraceful position, may awkwardly interfere with the picture, or assist in making it; or expression may depend on the state of the atmosphere, or the grouping and general arrangement of the subject. I believe it was Sir Thomas Lawrence who said "a knowledge of beauty was essential to truth"; therefore, if we wish to produce beautiful landscape photographs we must not neglect to put our knowledge of beauty into a form that others can appreciate by selecting times and seasons when the power of conveying truthful impressions is most readily available. Atmosphere is a potent factor in giving expression to a picture; without it everything is apparently on the same plane. A distant object is dark as a near one, and the linear perspective fails to give the idea of distance. Generally speaking, a light should be chosen that will give as much value as possible to the different planes of the picture, so that each object sets out distinctly from that behind it. This is especially required in open and extensive views, which, if improperly lighted, will be represented by foreground and a flat distance and middle distance, almost indistinguishable one from the other. Perhaps the most effective style of lighting is when the source of light is directly in front, corresponding with our studio Rembrandt effects, but it is only suitable for special effects and special subjects; even then the lens must be protected from the source of light, or the attempt will result in fog and failure. Very pretty effects may be had with this style of illumination when it is judiciously applied. The most generally useful light is a side light a little behind the camera. With this lighting, although the most artistic effects are not always secured, still it is safe not to produce inartistic effects, so far as the light is concerned;

however, so much depends on the subject and the effect desired, that it is idle, nay, impossible, to lay down any rule that would be applicable under all conditions. It is here that the artistic perceptions of the operator come in, and in this he has the opportunity of showing the stuff he is made of, and imparting individuality into his work.

[From the *Practical Photographer*.]

LANTERN SLIDE MAKING.

BY D. D.

THERE are two methods of making slides: by contact and by reduction through the camera; the former has the merit of being easy; one is not hampered by reason of dull, foggy weather; gas is generally available, or, if not gas, magnesium ribbon or an oil lamp are to be had. For contact work, very excellent dry lantern plates are in the market. A very good plan, if the first plates tried are found to be promising, is to purchase a few more boxes at once of the same make and batch.

There are many advantages in the per camera method of making slides—many quarter-plate negatives are, from a pictorial point of view, hardly suitable for giving the best results by contact. The subject may be too minute or it may not be quite in the right place on the plate. When we make a slide from such a negative by the camera we can not only select such portions of it as we require, but also enlarge or reduce it, all in one operation. If this method is decided upon, it will be necessary to proceed as follows: Supposing that we wish to make slides from half-plate negatives, a box about 7 x 5 x 12 inches long should be procured; fasten down the lid and remove the ends of the box; blacken the inside with black varnish or Brunswick black; fit a frame or carrier into one end to hold the negative, and see that no light can pass. Place this box arrangement upon a table opposite to a ground glass window, about 12 or 18 inches distant. Opposite the open end erect the camera with the lens, preferably a short focus rectilinear, toward the negative. It is well to remark here that for all copying (and, of course, slide making, enlarging and reducing) purposes, a camera which can be focused at the back is much to be preferred. It is worth while buying a camera specially for the work. A quarter-plate with wet slide can often be met with at a sale for a trifling sum. I have bought them from one shilling and upward. Such a camera can readily be converted into a long focus article, and, attached to a baseboard, will be found extremely useful. The image must be carefully focused upon the screen, which should be marked accurately to the size of a 3-inch square, adjusting the image so as to take in the whole or the chosen part of the negative picture. Use a magnifying glass to get the greatest possible sharpness, and see that the focusing screen and plate in the dark slide are in exact register. The space between the front of camera and the open end of the box should be covered over with a dark cloth during the operations of focusing and exposure.

Dry plates may be used, of course, and the exposure requisite to be given must be a matter of experiment. As a rule, this exposure will not be lengthy; thirty seconds may be tried as a commencement. But the finest method of lantern slide making is by the wet collodion process; and if an amateur wants a few hours' pure enjoyment at any time (I speak now of amateurs who have enthusiasm, and who can appreciate the beauties and theories of photographic processes), let him at once invest in a wet-bath outfit. The cost will be trifling and the enjoyment considerable.

Any one who goes in for wet collodion must make up his mind to perfect cleanliness in the darkroom, in the dark slide and in the matter of measures and fingers, and for the time the ammonia bottle must be vanished. On the other hand, more light (canary medium) may be used. Briefly, the following items are required: a glass bath and dipper, nitrate of silver solution, iron developer, cyanide of potassium (fixing

solution), glass plates. The bath may be purchased already fitted with a wooden outer covering, or a cover can easily be made. Now make up the following silver bath :

| | |
|---------------------------------------|------------|
| Recrystallized nitrate of silver..... | 1 ounce. |
| Nitrate of baryta..... | 40 grains. |
| Iodide of potassium..... | 1 grain. |
| Glacial acetic acid | 2 minims. |
| Distilled water..... | 12 ounces. |

Dissolve the salts in separate quantities of water, then add the potassium solution to the silver, and these to the baryta ; let it stand in sunlight for a time, then filter ; it should be distinctly acid. When not in use, this bath should be kept exposed to light. The above quantity will be more than enough for the dipping bath. After finishing the day's work, pour back into the stock bottle the solution and let it have as much sunshine as possible.

The developer recommended is from the following formula :

| | |
|--------------------------|----------------------|
| Iron sulphate..... | 150 grains. |
| Methylated spirit..... | $\frac{1}{2}$ ounce. |
| Glacial acetic acid..... | $\frac{1}{2}$ " |
| Brown sugar..... | $\frac{1}{2}$ " |
| Water..... | 10 ounces. |

It improves by keeping ; therefore, make up a good stock. The glass plates are usually sold "cleaned," but they will require polishing ; for this purpose nothing is better than rouge, made into a thin cream with a little ammonia and methylated spirit ; give a final polish with a clean chamois leather. It is hardly necessary to say that both back and front and edges must be perfectly clean. A drop or two of collodion rubbed on and polished off helps considerably to a proper surface. The collodion next claims attention. Buy a small bottle, preferably an old sample ; or, if new, let it be colored almost to a claret color with iodine tincture. Now, having filtered the bath and got all ready for a start, take a clean glass plate between finger and thumb by one corner, pour over the middle of the plate about as much collodion as would cover a dollar coin, let it run to the left corner, then down to the bottom corner, left and right, finally draining off at the fourth corner. While draining rock the plate gently to avoid crapiness and to secure an even surface. When just set place on the dipper, taking care to hold it always one way, *i. e.*, vertically, to prevent reflex draining, and immerse without hesitation in the silver bath. Any stoppage midway will show a line on development ; let the plate remain in the bath, say, four minutes, gently lifting and replacing once in that time. Now remove the plate carefully by the uncollodionized corner, let it drain for a few seconds, place in the dark slide, resting the corners upon small pieces of clean blotting paper placed in the rebate for the purpose ; the back of the plate too should have the superfluous moisture removed with clean blotting paper.

When carrying the dark slide to the camera and back, let the plate always drain in the same direction. Place the slide carefully in its place in the camera, draw the shutter and expose, well, say, one minute as a commencement ; remove to the dark-room, take out, and, holding the plate by the bare glass corner, pour over about two drams of developing solution. An egg-cup is useful as a measure. Pour on enough to go over the surface without stoppages and without running over, as if this occurs some of the silver solution is carried over with it, and all the silver is required to give density. If the exposure is right the image quickly appears, and density is easily got, but it is of little use attempting to force development. "Forcing," as we understand it with dry plates, is impracticable here, and it is far easier if under-exposed to rub off the film, repolish and begin over again. It will be noticed that in wet-plate development no dish is used, as only so much developer as will lie on the plate is required. Rocking in the developer, or treating with a quantity as in dry-plate develop-

ment, would remove the silver from the collodion film. Sufficient density obtained, wash under the tap and pour over a little of the following:

| | |
|---------------------------|-----------|
| Cyanide of potassium..... | 1 dram. |
| Water..... | 6 ounces. |

This fixes the image very quickly; again wash, a few seconds only, and then examine the transparency by daylight; it will be readily seen where failure has been. In the event of any cloudiness obscuring the high lights, this may result (the negative being a strong one) from the bath being insufficiently acid. A drop of pure nitric acid may, therefore, put this right, but a trifle longer exposure will be requisite.

As soon as some expertness is attained, it will be found convenient and expeditious to start two baths, so that one plate will be sensitizing while exposure and development is proceeding with a second. But this kind of thing pre-supposes good negatives, even and regular; and as collodionized plates may not be left for an indefinite time in the bath, the amateur is advised not to attempt too much at first. It is surprising with what ease and smoothness the process goes on; any failures are distinctly traceable to dirty or faulty manipulation, and by no means to the wet collodion process itself. After fixing and washing, the transparency can be toned with a solution of platinum chloride, iridium chloride, or gold, or mercury; in the latter case the image is rapidly bleached, then must be washed a few seconds, and a weak solution of ammonia applied and again washed. This toning is very easily done, but the results are by no means so permanent as with gold or platinum. Tone is of importance; warm for landscapes, black for snow scenes, and a bluish color for seascapes are most suitable.

The toning of dry lantern plates is not so easily accomplished as with wet collodion. The toning bath below (the well-known *sel d'or* bath) may be successfully used with either collodion or dry plates:

| | |
|--------------------------------|------------|
| Chloride of gold..... | 1 grain. |
| (To be dissolved separately.) | |
| Phosphate of soda..... | 15 grains. |
| Sulphocyanide of ammonium..... | 25 " |
| Hypo soda..... | 240 " |
| Water..... | 2 ounces. |

Plain bromide plates developed with a washing soda developer give a fine rich tone, depending, however, upon the exposure given. Take of—

| | |
|-----------------------|------------|
| Washing soda..... | 2 ounces. |
| Promide ammonium..... | 20 grains. |
| Water..... | 16 ounces. |

Add one grain of pyro per ounce of solution at the moment of using; in this case an alum bath will be necessary before and after fixing, and care must be exercised to have the water as cold as possible.

For lantern slides wanted quickly, and where lime light is available, an ordinary plate developed with pyro and sulphite, well fixed, cleared and intensified with mercury, will answer capitally. As a clearing solution for dry plates, the ferricyanide bath answers as well as anything. Take of—

| | |
|--|-----------------|
| Saturated solution potassium ferricyanide..... | 10 to 20 drops. |
| Hypo fixing bath..... | 5 ounces. |
| Water..... | 15 " |

MR. ADDENBROOKE'S hardened aluminium, which turns easily, and gives good castings, contains 100 parts. aluminium, 92; nickel, 4; tin, 3; and copper, 1. Details as to preparing the alloy are given in the specification No. 15,782 of 1891, just published.
—*Photographic Work.*

[From *Canadian Photographic Journal*.]

FLASH-LIGHT PHOTOGRAPHY.*

DR. N. A. POWELL.

THE making of pictures by the aid of the magnesium flash-light has been undergoing a process of evolution for the past five or six years. The journals have contained many papers upon the subject; chapters discussing it are to be found in a large number of manuals, and at least two books dealing entirely with it have already been published. It is no part of my present purpose to sift this extensive literature for you. Instead, I shall content myself with demonstrating certain methods which, having tested, I have found to be at once simple and satisfactory. For the needs of a surgeon these procedures are particularly well suited, and it is to one of my own craft, Dr. Piffard, of New York, that we are all indebted for the introduction here of photography by artificial illumination. In this connection it is worthy of remark that, for the production of the most accurate and life-like pictures of skin diseases and other morbid conditions, Dr. Piffard prefers artificial to sunlight. He has recently brought out a work illustrated by such photography, and surpassing in many particulars any previous publication on the subject.

It is within my knowledge that many amateurs who do creditable work out of doors have with magnesium failed to obtain any results which they cared to exhibit to their friends. Deep shadows, hard, chalky, high lights, staring eyeballs, burns, dirt and disappointment have been their reward, instead of the artistic results they had hoped for.

At the risk of going over what is perfectly well known to many, if not most, of those present, let me mention some of the essentials for success in this line of work. The lens, preferably one of the "R.R." type, must not be stopped down below $f/11$; the plates used must be fast ones, such as the Cramer "C" or the Seed 26^x; the background must not be too near the sitter or it will show direct shadows, and its tint should be lighter than for use with daylight. The correct focus is most easily and rapidly obtained by the use of a lamp, a newspaper and a focusing glass. Let the light of the lamp fall on the newspaper, held upside down and raised, lowered or carried out to the sides, in order to determine just what will and what will not come upon the plate. As a general rule, the gas or lamp lights should be turned up, so long as they do not shine into the lens, and they should light up that side of the face which will not be lit by the flash. In this way its shadows are softened and hard lines avoided. It is a good plan to have the sitter look directly at one of the gas jets or lamps. He will thus not be so much disturbed by the sudden increase of light when the flash is made, and will not be so apt to have a startled or staring look or to close his eyes suddenly.

I think the advice often given to place the flash apparatus over the camera is an error. It is better to have it placed higher than the lens and to one side or the other of it. An exception to this is seen where a fireside or camp-fire group is to be taken and the object is to make it appear as though their faces were lit up only by the fire around which they are placed. Even in photographing a cavity like the back part of the throat, I have found the detail brought out best when the light came from a position slightly to one side of the lens. For diffusing the light, and so obtaining soft instead of hard negatives, a sheet of ground glass is excellent, and a sheet of bright tin makes as good a reflector as need be desired. I have used for more than two years the convenient arrangement, consisting of a piece of board 15 to 20 inches long by 1 foot wide, with a plate fixed to the middle of its under surface, so that it may be secured upon any tripod stand. At each end of its upper surface a pair of parallel wooden strips are nailed so as to form slots to support, in upright positions, the tin reflector and the ground-glass diffuser. Between these two the flash lamp is

* Before the Toronto Camera Club. From proofs sent through kindness of the author.

placed. After trying a number of the patented articles, I have reached the conclusion that the simple one which I devised, and described in the *Beacon*, gives as good results as any other, and has the advantage of being easily made by any one with skill enough to press a button. A flower-pot saucer has a hole bored through its rim to allow of the passage of the stem of a clay tobacco pipe. The bowl of the pipe is to be fixed upright in the middle of the saucer by means of plaster of Paris. A rubber tube, ending on a mouthpiece, is fitted over the stem of the pipe. Next, a wire ring, supported at a height of 3 or 4 inches, is placed so as to surround the pipe bowl, and upon this ring asbestos wicking is twisted.

When it is desired to make a flash, from 5 to 20 grains of pure magnesium powder is to be placed in the bowl, and the wicking is to be saturated with alcohol. Lighting the alcohol, and then blowing through the tube, forces the powder into the long axis of the flame, and perfect combustion takes place. By a number of experiments, I have demonstrated that a sudden, strong blast which lifts the powder in a mass out of the pipe, does not give as good result as a gentle, promptly followed by a forcible, blowing. This latter method loosens up the powder, and then sends it through the flame in balloon form, giving a maximum of illumination with a minimum of magnesium oxide, falling as a dust cloud after the flash has been made. Asbestos is much better than candle-wick, as it does not burn, gives off no smell, and the flame on it can be easily blown out.

In some particulars, the diffusing apparatus above described resembles a patented article sold in the United States; but mine was in use before that came out, and the cost of the entire outfit need not exceed a dollar. Any one can make it; it comes apart for packing, and the results obtained by its use in the hands of my friends, as well as in my own, are not discouraging.

PHOTOGRAVURE.

BY A. DAWSON.

[Photographic Society of Great Britain.]

THIS subject presents itself to the mind in a changing aspect as time goes on. Indeed, most things do. The early stage has a different air from that of progress or maturity. A romance and a feeling of expectancy gradually changes into a critical and judicial attitude.

That which most induces this thought is the immense thing that photography itself has become. In nothing has the expectant aim and that anticipatory joy of the mind in the future achievements of our sciences been so marked as in photography and its artistic aims. It is too great a diversion to even name the leading branches of the art-science and their relation to our aims and desires. But it is worth while to give a definition of the aim of all photographic art as "that which can autographically place on record all that can be seen with the eye, or that might be seen if we had powers as great as our methods or chemicals," as these go so far beyond the optical power of the visual organs. When a photograph not larger than a halfpenny shows 50,000 stars, one, of course, is bound to wonder greatly at the result; fifty years ago it would never have been dreamed of. The bare idea that we should ever be blessed with such an all-potent thing would simply beggar the mind of any one living one hundred years ago.

This it is which puts each of the branches of photographic art into line. Photo-gravure is only one of the very many and growing methods of making a photographic picture. And the operator of one method—such as collotype, for instance—is as far removed from the one who takes a portrait as possible. The many details that belong to each and every branch quite separate them, and, so separating, cause the whole to spread out in one enormous field of work that few of us ever consider as a whole. It seems to me impossible for one man to grasp all the multitudinous details of every branch of the photographic art. Those details constantly expand from year to year; new details are introduced and discovered, and it is quite impossible for one mind to master all of them.

Of general remarks I will only name one more; it is that concerning progress.

One can never try, or learn, or practice, too many details and methods in the particular branch that you study. The steady working of a formula is very well, but the vast accumulation of trials and failures recorded in the mind, or in some more tangible form, go steadily to make progress, because one or another long-disused method, combined with new materials and in a new way, produces a new discovery of great value. The very wrecks of the past are sorted over, and morsels picked out to find out an important place in some grand new method. I apologize for this long introduction, but a great respect for the workers of the past, and also of the present, compels this form of acknowledgment. To how many workers, living and dead, is the photogravure operator a debtor; and how many apparently insufficient things are brought forward to produce better results now? This is the leading idea which I would emphasize, for it is the golden thread of future victories in this and every branch. We appreciate, of course, the charm of an old ruin—there is nothing like it. An old ruined abbey adds a quite peculiar grace to an English landscape; but it could never have existed had there not been a most expensive building to ruin, and the charm would never have been there had there not been an enormous expenditure of time and labor in producing the delicate tracery. You must view the work of those men before us very much in that light. Dr. Hunt, of Redruth, Cornwall, was such a worker. His knowledge and patient care in studying the physical phenomena of light met with but little reward, you might say, in his time; but he lived long enough to see a great many results, and he was one of the noblest workers of his time. Our results at the present time largely follow from the work of men who have been a good deal less fortunate in seeing those results than Dr. Hunt was.

THE "MAIN ASPECTS" OF PHOTOGRAVURE.

Photogravure presents itself to my own mind in three main aspects:

1. Its economic aspect, as regards "cost," "outfit," "speed," and their bearing on the different classes of published matter.
2. Practical aspect, methods of production and relation to the class of work in hand, together with all technical details.
3. Suggestions for the future, and particularly as to new openings.

The economic or the practical aspect would, either of them, furnish enough points for a long essay; but I will run quickly through the principal ones in each case. In the paper which I had the honor to read before the Society of Arts some years ago, the economic aspect was only touched upon. This time we will look into it more fully.

The first and most important item on the economic side is that of printing cost. The limitations of printing cost are almost as well fixed as those of getting coals, or any such service that you can think of. For printing we employ a class that we find ready to our hands; the copper-plate printer of many years' standing is our printer, and thus we are in front of a standard cost in production which cannot vary very much; and the chief point that one ever notices is the greater or less ease with which one or another plate can be printed, thus getting more prints in a day from an easy-printing plate than a difficult one. One plate must cost sometimes twice as much to print as another, and yet to the public and the customer is apparently no different, and they say, "Oh, why should you charge twice as much for this as for the other?" But if you do not, you will lose; you cannot help it. Mezzotint engraving is very slow to print, and photogravure, if it is of that full nature, is also slower to print; but a slight, sketchy effect, however catching, is quicker to print. The mezzotint is the slowest of all methods to print. The little impressions in the old mezzotint are something like **V**. Big and little, big and little, all of a certain shape. Now a **V**-shaped impression does not hold so much ink as **U**—the cavity is not so capacious; if the points go off a very little bit, the cavity has still less capacity. Yet there is one charm of the old mezzotint which we never can get; when it is scraped away to produce a light tint, you retain those little punctures. Now, processing, in so far as I have seen, is unable to produce that detached puncture for the light tint. That little puncture, producing comparatively widely separated dots, gives a large area of perfectly clean paper; thus the lights of a mezzotint are more beautiful than the lights of our process plate. The process plate has a tendency to be like ~~~~~ in the light—it does not matter by what method the plate is made—and the consequence is there is not much clean paper between them. The color is easily got out by the press, but it is not clean work. Then, if you scrape it out with the scraper, it is a very clean white; but with the former it goes in a sweet way, leaving a little bit almost to the last. The necessity with regard to the mezzotint plate is that **V**, not holding so much ink as **U**, requires very stiff ink. The man has to grind that ink till it is as stiff as putty; and when ink is as stiff as putty, it takes a good deal of patience to clean it off, leaving a nice layer all through the plate so that it may print full and nicely, because, if it is not

stiff, it comes out of the cavities and will not print a dark tint. Now we have good deep cavities, and with a comparatively thin ink we can leave enough to print a dark tint. Consequently, the photogravure print is economical to make. You have to remember that the old plate is more expensive to print than any chemical plate that we can make, so that on that ground you can talk to the old printers and say, "Yes, they are expensive; but they are not so dear as mezzotint plates." Having now shown the mezzotint plate to be a hard plate to print, we go off to another point. The cost of printing and paper seldom gets much below 1 penny per impression for ordinary sizes. We pay 8s. for the portfolio size, which is about *Art Journal* size, 10 inches long. That costs a penny per impression for labor only in printing. You have to remember that engravings would cost five or six times as much; they must print 7,000 to 10,000 to make it down to a penny per impression, to pay for the plate—in fact, I could have shown you a plate which cost £100 to make. I suppose there would be 3,000 or 4,000 printed from it; but, of course, that does not pay £100, except at several pence. When you go piling on the pence, then comes the difficulty with the public; they do not see it. And when, for a penny paid out, you have, according to the modern economic situation of the bookseller, to charge the public twopence, it is easily seen what a charge this becomes. This is the greatest drawback, economically, to photogravure. Many a job is done by the collotype method because it has a low cost for the first print made, while photogravure is high; but, for a record, collotype depends on its negative, which is more frail than the costly copperplate, and therefore unsuited to a standard edition of a book. Of course, you could with collotype go back to one impression and say, "That is a record." But I dare say you all know how "process on process" degrades the result. You take a photograph from a photograph—it is so much behind it. It is better if you can go back to a standard that you can depend upon.

(To be continued.)

LANTERN SLIDES—WET OR DRY?

DEAR BULLETIN :

In your issue of September 10th I see that "An Outsider" has gone for me. Hoorah! That is just what I wanted. There is nothing like getting up a discussion, and to do it you must come out bold and strong with some assertion. If you want to find out what a man knows, discover his hobby and then his weaknesses, and go for them. He is sure to tumble into the trap, but I shall not attempt to gobble him up. Oh, no; that would never do.

Some years ago (1858) in a political meeting, a stump speaker was pitching into a candidate for the Presidency, and was giving him some hard raps, when an enthusiastic individual in the audience called out, "Good! Hit him again." Drawing himself up to his extreme height and with a look of disdain, the speaker said, "What? Hit him again? No! Let him alone and he will hit himself." Now, Mr. Outsider, whoever you are, Male or Female, I want to say one word (or a few more). To show a line of lantern slides on the screen made by different methods, on dry and wet plates, from dry and wet plate negatives, and then expect the audience to choose between them and select the process by which they were made by their showing, seems to me to be as ridiculous a piece of work as can be attempted, and I wonder that at this day men could be found who would do so. Let me ask you, and you should surely be able to judge by this time, "How does the average negative as made to-day on dry plates, compare with the wet-plate negatives made prior to 1881?" Bring out the negatives and show them. I have some I will send to such an exhibition, made by (no matter who) and for fineness of delineation, or keenness of detail, coupled with roundness or softness, call it whichever you please, I will let them compete with any dry-plate negatives that can be shown.

Now, mind you, I do not wish it to be understood for a moment that I

underrate dry plates or negatives produced on them. They are so much quicker than wet plates, and this is in itself so great a boon to the photographer, to say nothing of the convenience, that I look on them, in one way, as a great improvement and an advance on old methods in certain lines, but I will not admit, as yet, that they produce finer results, or even as good, on the average. You can find here and there some few men who get out of the dry plates the finest effects which they are capable of producing, and they are beautiful examples of photography.

Now, had these same men been "in it" in wet-plate days, and had done as well in proportion in the wet process as they do now in the dry, what would have been the results?

What particular results are we looking for in a lantern slide? I believe they are as follows, "Sharpness, detail, roundness and softness" and all the other "nesses" you can squeeze in.

To get the sharpest results, you require a film almost immeasurably thin. In the wet collodion plate you get it, and that is one reason the photo-mechanical processes require wet-plate negatives. Detail is a matter of time and development, and, with the other qualities mentioned, depends on the skill of the operator.

Two plates exactly alike as regards every quality and exposed alike, in the hands of different men, would show different results. Each one would develop for some special aim in his mind, and there are no two who think alike on the subject.

A good idea suggests itself to me, viz.: You provide a negative, that is supposed to be, according to the judgment of several, a fine one in every respect. Now, pass this around and have some dozen or more "Outsiders" make a lantern slide from it, mark the results and exhibit them "incog.," for some of the experts to judge upon. When he speaks of an exhibition of slides by the professor . . . as Mr. Outsider saw, he chooses one of the top notch, lord high executioners who has it down as fine as can be found in the country. Such men are few and far between. They make it a special branch of study and we can any of us learn from them.

I would be glad to take lessons myself, if the natural material was such as to admit of absorbing enough to enable me to ameliorate the quality of my work. True artists are born, not made. Imitations can be picked up anywhere.

I will send you a negative, suited to make lantern slides from by contact, and you can allow your "Outsiders" to copy either by contact or by aid of the camera, and either wet or dry process. Then, have them exhibited when and where you please, and let me be one of the audience, to hear what "Outsider" has to say about them. How does it strike you? Did "Outsider" ever make a lantern slide?

ABE LIZZARD.

HIGHLY COMPLIMENTARY.

Mr. J. C. STRAUSS, of St. Louis, whose work is now celebrated all over the world, has just received the following letter from Mr. J. Hawke, a celebrated photographer of Plymouth, Eng.:

"Mr. J. C. STRAUSS,
St. Louis, Mo.:

Dear Sir,—I am going to ask you a favor. Two or three times this year I have seen some of your cabinet photographs, and have especially admired the finish, and, in fact, the whole turnout. The paper is far and away ahead of us.

I have been in communication with Atkinson, of Liverpool, who is supposed to make a specialty of American goods in photography, but who has not been able to procure me any paper *that will compare with that you are using*. Now, can you oblige me by letting me know what brand of paper you use? You will be doing me a great favor if you can spare the time for a few lines. Pray accept my apology for troubling you, and believe me,

Faithfully yours,
JAMES V. HAWKE."

It is needless to say that Mr. Strauss promptly advised Mr. Hawke that the paper referred to was that manufactured by the American Aristotype Company, of Jamestown, N. Y., which Mr. Strauss has used constantly for nearly two years. Thus is scored another high compliment to an American artist and an American product.

THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK

Have secured for the Columbus Naval Parade, Tuesday, October 11th, the side-wheel steamer "Meta," licensed to carry five hundred people. The Committee have limited the number of tickets to one hundred and fifty (first hundred at \$2 each, and fifty at \$3 each). Tickets can be purchased at once upon application to Frank C. Elgar, 111-115 West 38th street.

T. J. BURTON, *Chairman*,
W. F. HAPGOOD,
FRANK C. ELGAR,
Committee.

NEW YORK, September 15, 1892.

ANSWERS TO "A TOUCHING APPEAL."

WE are glad to acknowledge the receipt of the following amounts as subscriptions to the H. H. Snelling fund.

| | |
|------------------------|---------|
| C. D. Fredricks..... | \$10.00 |
| Alexander Beckers..... | 25.00 |
| F. W. Guerin..... | 1.00 |
| E. Long..... | 5.00 |
| M. Carey Lea..... | 15.00 |
| T. E. Benedict..... | 0.50 |

Other subscriptions are promised, but the amounts have not yet been stated. Those given above have been received and sent to Mr. Snelling. Our charitably disposed readers may send any amount they please, but send soon and help while you may. *Are there no more who are willing to help?*

OUR ILLUSTRATION.

THE handsome photogravure that forms the frontispiece of this issue of the BULLETIN is one of those artistic efforts of Mr. John E. Dumont that have made his name famous as an amateur photographer in two continents. We are always pleased to reproduce work of this kind, and only regret that there is not more of it. Mr. Dumont is the owner of a large number of medals and trophies captured in many contests with the best photographers in the world, and we are proud to be able to give our readers another example of his fine work.

DESPITE the fact that no notices were issued, a few enthusiastic photographers, including Mr. Mason, the secretary of the Section, turned

up at the Institute's rooms at 113 West 38th street. The small attendance rendered a formal meeting impossible, but a very pleasant hour was spent in chatting on the different hand cameras now in use.

The secretary explained that though it had hitherto been the custom to hold the first meeting in September, that meeting had always been poorly attended, owing to so many members being out of town. He expected a large attendance at the October meeting. Speaking of the programme for the coming season, Mr. Mason hoped for even greater success than attended last year's efforts. While the exhibition of lantern slides would still be an important feature of each meeting, it was intended to give a decided practical turn to the discussions, every encouragement being offered to all who had anything new to bring before the photographic fraternity.

While at times last session the room of the Section was crowded, it would seem that if the advantages offered were better known, many more would attend. The photographic section of the American Institute seems to occupy a unique position among photographic societies. Its aim is to encourage and advance the science and art of photography, and it works quietly and steadily. There is no blowing of trumpets or official red tape. Everyone is welcomed, made to feel at home, and invited to air their opinions on any matter under discussion. For the non-photographic portion of the audience things are made interesting by a capital exhibition of slides at every meeting. These exhibitions are made the subject of discussion, and the slidemaker may pick up many hints as to the toning and general treatment of lantern slides. During the last session some of the finest slides in the country were exhibited and keenly appreciated by critical audiences.

In addition to this, there is usually a quantity of new apparatus on exhibition, the audience being thus kept posted on the progress of the manufactured appliances in use. Upon application to the secretary, a postal will be sent to anyone, with information as to programme for the ensuing meeting.

The Section meets on the first Tuesday of each month, at its rooms, at 113 West 38th street.

SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

THIS society held its first meeting for the session, 1892-93, on Tuesday, September 13th.

The subject of tele-photographic lenses was dealt with by Mr. W. M. Murray. He began with a brief resumé of the optical principles involved in the problem of tele-photography, describing Kepler's astronomical telescope, and that of Galileo, explaining the properties and action of the eyepiece. He then dealt with Dallmeyer's invention, describing the various forms of tele-photographic lenses made by him, explaining their action. The Miethe lens was also described, the informal talk being well illustrated with diagrams.

At the close of his remarks, several views made with tele-photographic lenses, and presented to Mr. Warrin by Mr. Dallmeyer, were exhibited. Mr. Murray presented his subject in a very able and interesting manner, covering the ground fully.

Mr. Beach exhibited some enlargements and some Aristo prints. Mr. Hapgood showed a Thornton-Packard time and instantaneous shutter; also a portable electric lantern, operated by storage batteries. When shielded by a suitable screen, this has been found convenient for use in the darkroom.

A short executive session followed and the meeting adjourned.

The Society of Amateur Photographers have secured for the Columbus Naval Parade, Tuesday, October 11th, the side-wheel steamer "Meta," licensed to carry five hundred people. The committee have limited the number of tickets to one hundred and fifty. Tickets can be purchased at once upon application to F. C. Elgar, 111-115 West 38th street.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. Correspondents will please remember this. No attention will be paid to anonymous communications.

Q.—W. H. B. writes: Will you kindly inform me through the columns of the BULLETIN how I can remove prints from cabinet mounts? I have three or four boxes full of cabinet photos and would like to remove the prints from them without destroying the gilt so that I can use the mounts again, as they are first-class enameled gilt-edged ones.

A.—The only reliable method for removing

prints from their mounts is by means of hot water. This method is, however, liable to injure a gilt-edged one, and is consequently unavailable for your purpose.

Q.—D. L. P. writes: Will you please answer the last query I made which is published in Vol. 23, No. 16, page 511, in regard to removing the yellow stains from a negative which are sometimes seen after intensifying with bichloride of mercury and ammonia?

A.—This is one of the cases where an ounce of prevention is worth any amount of cure. We know of no thoroughly effective method of removing these stains when once they have made their appearance. Wash out the hypo thoroughly before intensification and you will not be troubled with them.

Q.—C. S. H. writes: In the August BULLETIN, No. 16, "Editorial Notes," on Coloring Photographs, there is mentioned some new color. Will you kindly look this up and let me know if any such colors are yet in market? This is what I should like to have.

A.—The notice of the discovery of these colors was taken from a foreign journal, and we believe that they are not as yet in this market. If you wished to procure any quantity, we doubt not that our publishers could obtain them for you.

Q.—A. A. G. writes: Will you please let me know how I can convert a tintage bath into a good printing bath? I have over a gallon of bath, 50 grains of silver to the ounce. I have tried it, but it will not tone up properly.

A.—Add to your bath a solution of carbonate of soda until faintly alkaline. Filter out the precipitate thus formed, and wash it thoroughly with water, after which, dissolve it in as little nitric acid as possible. Evaporate the solution thus formed to dryness in a water bath; dissolve in a little hot water and allow to cool and crystallize. The crystals thus formed will be nitrate of silver and you can use them to make up any silver bath you choose.

Q.—W. E. H. writes: Will you kindly tell me how to keep the whites clear in using the No Gold Toning Bath? I have tried both gelatine and American Aristo paper, and in spite of all precautions the white will yellow in drying. They are white enough when first taken out of the wash.

A.—We have occasionally experienced the difficulty you mention, but are inclined to think that it comes from leaving the print too long in the toning bath. Soaking the finished print in a weak bath of acid sulphite of soda

may prove beneficial. See if your toning bath is not acid.

Q.—J. J. P. writes: Will you please answer the following questions in the query column of the BULLETIN? 1. How long to expose Eastman's kodak film, No. 4, to take water or landscape in very bright moonlight? 2. How long by electric (arc) light? 3. When making exposure by moonlight, if electric lights happen to be in vicinity, though not shining directly on the lens, will they affect the plate or film sufficient to fog, and in what length of time? 4. Are lenses which are extra rapid in sunlight also extra rapid in electric and moon light? 5. Ditto plates? 6. Are same kind of developers that are used for negatives exposed by daylight suitable for negatives exposed by electric or moon light, or must they be different? 7. When intensifying negatives with bichloride of mercury solution they take on a beautiful milk-white or pearl color, which changes to dark brown when immersed in ammonia solution. On some of my negatives I wished to retain this milky color, but exposure to light turned it dark, and when I attempted to "fix" it by putting in hypo, the result was the same. Is there any way to make the milky color permanent on the negative? 8. Can you give formula for good eikonogen developer for time exposures (plates or films) to work slow, say, three to five minutes and not fog? 9. Do negatives exposed by flashlight require different kind of developer from those exposed by electric, moon, and sunlight.

A.—1. The length of exposure required will vary with the subject. You will find it next to impossible to obtain any detail in a picture taken by moonlight. Personally, we have found an exposure of three hours necessary to obtain even a very unsatisfactory negative. 2. It is impossible to answer this question as you have put it. With sufficient illumination from an arc light, only a fraction of a minute would be required; with less, more would be necessary. 3. We do not exactly understand your question. If the landscape is partly illuminated by an arc light, the necessary exposure would be shorter than if it was not present, and with a proper exposure no fog would result. Over-exposure would undoubtedly, however, produce fog. 4. Yes. 5. Yes. 6. Yes. 7. We know of no way. 8.—

No. 1.

| | |
|-------------------------|-----------|
| Sulphite of sodium..... | 4 parts. |
| Eikonogen | 1 part. |
| Water | 60 parts. |

No. 2.

Carbonate of soda (cryst.). 3 parts.
Water 20 "

Use three parts of solution No. 1 to one part of solution No. 2. 9. Any good instantaneous developer will be found suitable.

Views Caught with the Drop Shutter.

Mr. C. F. COOKE, of Wilkesbarre, Pa., contemplates making extensive alterations in his studio. Heretofore the second and third floors have been occupied as a dwelling place. These are to be altered and redecorated and used as reception rooms and parlor.

ANOTHER newly fitted-up studio is that belonging to F. M. Montignani in the new Barnum Building on State street, Bridgeport, Conn. The various apartments have been elaborately furnished and the effect is more that of a drawing room than a photographic atelier.

WE learn with regret of the series of misfortunes that have befallen photographer D. H. WEDDELL, of McKeesport, Pa. He has been personally laid up with an attack of the grip for some weeks, during which time his wife has also been confined to her room, and but a few days ago his son met with an accident which confines him to his house. We would extend to him our sympathy and best wishes for a speedy recovery of himself and family.

A FIRE which originated in BARRON'S photographic studio on the night of September 1st did considerable damage to the building

in which it was located. The loss occasioned was only partly covered by insurance.

Mr. M. CUMMINGS' studio at Corsicana, Texas, was completely destroyed by fire on August 27th last. The origin of the fire is unknown, and the loss occasioned by it was only partly covered by an insurance of \$600.

A NEW photo-engraving company has recently been started in Springfield, Mass., under the name of the THE SPRINGFIELD PHOTO-ENGRAVING COMPANY, by CHARLES VAN VLACK, who has associated with him, GEORGE E. DOW and WILLIAM C. VAN VLACK. This is the first concern of the kind to be established in that city, and we heartily wish them every success.

THE spark of a passing engine, it is claimed, started the fire in S. HUMMLER'S studio in Scranton, Pa., which resulted in the complete gutting of his establishment. The loss will probably reach \$2,500, of which only \$1,500 was covered by insurance. Mr. Hummler, we understand, intends resuming at once.

A DISASTROUS fire, which raged in Augusta, Ga., on August 28th, completely destroyed the studio of Mr. HARRY HALL, of that city. The loss will probably amount to \$3,000 over and above the insurance carried, which was only a small amount.

WE regret to note the death on September 4th of LOUISA ATKINSON, the wife of John J. Atkinson, the well-known photographic merchant of Liverpool. We tender our sincere sympathy to the bereaved family.

TABLE OF CONTENTS.

| | PAGE | | PAGE |
|--|------|--|------|
| ALUMINIUM FOR THE FLASH-LIGHT ... | 556 | PHOTOGRAPHURE, by A. Dawson..... | 568 |
| AMERICAN INSTITUTE—PHOTOGRAPHIC SECTION..... | 572 | PLATINUM AND PLATINUM RESIDUES.. | 555 |
| AMIDOL..... | 562 | SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK..... | 574 |
| ANSWERS TO "A TOUCHING APPEAL"..... | 572 | ST. LOUIS CAMERA CLUB..... | 573 |
| DO NEGATIVES LOSE DENSITY IN FIXING?..... | 553 | THE LANTERN CRAZE IN PHOTOGRAPHIC SOCIETIES..... | 545 |
| EDITORIAL NOTES..... | 548 | THE PHOTOGRAPHIC SOCIETY'S STANDARDS..... | 561 |
| FLASH LIGHT PHOTOGRAPHY, by Dr. N. A. Powell..... | 567 | THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK..... | 572 |
| HIGHLY COMPLIMENTARY..... | 571 | THE SPECTRUM SENSITIVENESS OF HALOID SALTS OF SILVER, by Capt. W. De W. Abney..... | 559 |
| LANTERN SLIDE MAKING, by D. D.... | 564 | VIEWS CAUGHT WITH THE DROP SHUTTER..... | 576 |
| LANTERN SLIDES—WET OR DRY? by Abe Lizard..... | 571 | WHAT OUR FRIENDS WOULD LIKE TO KNOW..... | 574 |
| LIGHTING AND EXPRESSION (Continued)..... | 563 | | |
| OUR ILLUSTRATION..... | 572 | | |
| PHOTOGRAPHY IN RELATION TO PAINTING, by Arthur Burchett..... | 550 | | |

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NEGATIVE BY S. J. CONLEY BOSTON

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EXTRA BRILLIANT ALBUMEN PAPER.

A JUVENILE BOSTONIAN.

ANTHONY'S Photographic Bulletin.

EDITORS :

PROF. CHARLES F. CHANDLER, PH.D., LL.D.

PROF. ARTHUR H. ELLIOTT, PH.D., F.C.S.

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No. 19.

HARVARD'S NEW TELESCOPE AND STELLAR PHOTOGRAPHY.

THE new photographic doublet in course of construction by Alvan G. Clark, marks an epoch in the development of stellar photography. It is the largest of its kind ever attempted, the diameter of its lenses being 24 inches.

The instrument was built on the same general plan as that which characterizes the construction of the 8-inch telescopes now in use, and is calculated to cover a 14 x 17 plate at each exposure. Past experience has shown that the 8-inch instruments are capable of photographing any stars that are visible to the eye through a 15-inch visual instrument, and it is therefore assumed that the new 24-inch one will photograph much fainter stars by reason of its larger aperture.

The very short focus of the instrument has necessitated lenses which are both exceedingly thick and heavy, and, in consequence, the work of construction has been attended with extreme difficulty. Eight months have already been devoted to it, and it is far from being completed now. The lenses are made of the finest of optical glass, and will weigh, when finally ground and polished, in the neighborhood of 100 pounds each.

In front of the lenses is placed a prism for use in photographing the spectra of the stars. The thick edge of this prism measures 3 inches, while the thin one measures only seven-eighths of an inch. The bed plate will be 10 feet 4½ inches by 6 feet in width, and the tube will be mounted on a large steel axle of 10 feet in length, and weighing upwards of a ton. The wheel to which the clockwork is attached will be 5 feet in diameter, and the controlling mechanism and gearing which regulates the instrument to the motion of the earth, will be controlled by electricity.

This instrument is the gift of Miss C. W. Brush, of New York, to Harvard Observatory, and is to cost, when complete, about \$30,000.

It is intended to first set it up at Cambridge, where, after a thorough and

careful testing, it is to be sent to the Harvard Observation Station in Peru, where the conditions for its successful operation are greater than in any other place in this country. Here it will be in the charge of Professor Pickering, who is devoting his life to the work, and the results will be eagerly looked forward to.

In making the first test the tube was mounted upon a rude trestle of wood in the yard adjoining the Clark telescope manufactory in Cambridge, and the North Star was the subject decided to make the exposures upon, as, owing to the close proximity to the Pole, there is but little motion necessary to be compensated for by clockwork. Mr. Clark personally made the exposures, of which there were ten, lasting all the way from seven seconds to a minute. On development of the plates and examination of the images produced, considerable spherical aberration was found to be present which has yet to be corrected. The size of the images varied from that of a pin's head down to an extremely minute and sharp point, and were very satisfactory in character. The 8-inch instruments cover at each exposure an arc of the heavens which is 10 degrees square, and the new instrument, while covering the same ground will give an image on three times the scale produced by the 8-inch ones.

It may be of interest to our readers to know that Mr. Rutherford was the originator and introducer of the photographic method of stellar observation. The employment of an object glass, especially constructed with regard to the chemical rays rather than the visual ones, was first introduced by him, as well as the so-called "photographic corrector," by means of which an ordinary object glass can be made to give a sharp image upon the sensitive plate. The construction of the first instrument of this class was planned and executed under his direction, and at his own house.

Soon after entering this field, it became apparent that some method for guarding against distortion in the sensitive film was necessary, and this obstacle was also met and surmounted by him. At first he labored alone in the field without either sympathy or encouragement from most of his brother astronomers, and it was long ere he received the honor and credit due him for his improvements and processes.

A great disadvantage at the outset was the necessity of using wet plates, as the gelatine dry plate had not yet been discovered. This medium was, judged by our modern standards, a very slow one, and the exposure was necessarily limited to the time required for the plate to dry. When it is taken into consideration that there is at present practically no limit to the time of exposure, which may extend over all the hours of darkness for many successive nights, it will be seen how immense these disadvantages really were. Owing to the increased sensitiveness of the modern gelatine dry plates, it is to-day easy to extend the time of exposure to fifty times that which was possible by any of the photographic processes in use prior to 1880.

It must be borne in mind that with the development of the negative and the consequent production of the visible photographic image, that the astronomer's work has only begun. He can by this means, it is evident, reproduce a chart of the heavens, and such is at present being done by various astronomers throughout the world, working in unison; but the relative positions of the stars thus mapped out have yet to be determined.

Think of computing the distances apart in space of two heavenly bodies from their reproduction in a photograph in which a distance of thousands of miles is represented by a hair's breadth.

To do this, a measuring machine was constructed by Mr. Rutherford, which was arranged in such a manner as to measure the position, angle, and the distance of every star on any plate from a central star. The distance measured depended at first entirely on readings of a micrometer screw; later, this was improved by using a glass scale, one division of which was equal to the revolutions of the micrometer screw. In this manner the screw was only used for the fine adjustment of the scale, it being placed approximately at first by the hand.

This machine was presented to Columbia College in 1883, and is now being used to measure the distances on a valuable collection of stellar and astronomical negatives in their possession.

In the last few years stellar photography has made still greater advances through the introduction of orthochromatic plates and screens, and by this means the photographing of the spectra of stars has been made far more satisfactory than was previously possible.

At the International Congress the adoption of orthochromatic plates was strongly urged in connection with the new chart of the heavens, but the changes which it would be necessary to make in many of the instruments to be employed led to its abandonment.

EDITORIAL NOTES.

THE new developer, amidol, is said to work with very excellent results, especially in conjunction with ammonia. A formula, which is highly praised, is—

| | |
|--------------------------------------|------------------|
| Amidol..... | 7 grains. |
| Metabisulphite of potash..... | 10 “ |
| Bromide of potash..... | 3 “ |
| Ammonia (10 per cent. solution)..... | 20 to 30 minims. |
| Water (distilled)..... | 1 ounce. |

THE formal opening reception of the Minneapolis Camera Club took place at their new rooms on the 14th September, and was largely attended and much enjoyed. An informal talk by Mr. Ralph D. Cleveland, on “Pictorial Effect in Photography” was one of the most interesting events of the evening.

AT the last meeting of the Hiawatha Camera Club of the same city, an illustrated lecture on “The Cliff Dwellers,” by H. J. Smith, was announced.

THAT disagreeable yellow color in the negative, after a long development in pyro, may be removed by the use of the formula, given so many times, but none the less good, which is advised by Mr. B. J. Edwards, as follows :

| | |
|---------------------|-----------|
| Iron sulphate..... | 1½ ounce. |
| Sulphuric acid..... | ½ dram. |
| Alum..... | ½ ounce. |
| Water..... | ½ pint. |

It is always well, however, to make as good a print as possible from the negative before making any attempt at either reduction or intensification, as “accidents will happen in the best-regulated families.”

THE Worcester (Mass.) Camera Club enjoyed a delightful trip to the old historic town of Concord on the 10th of last month, and captured a number of valuable subjects, both from a pictorial and historic standpoint. A lantern slide exhibition was given by the club on the 19th.

A RECENT invention is said to be a machine that will cut, polish and grind four hundred spectacle lenses at one operation. This is the work of a Baltimore optician, and is something worthy of note, as the manufacture of a lens involving even so little mechanical perfection as a spectacle lens, has hitherto been accompanied by a deal of manual labor.

PERHAPS one of the most unusual subjects to be photographed of which we have read, is a large South African crocodile, which was surprised by a party from one of the missions there, while out on a sporting tour, and photographed by Mr. F. Moir. We may say that Mr. Moir was ably seconded by four native blacks, who assisted the subject to sit—as without their services he would have run off the plate before he could have been “taken.”

THE New Orleans Camera Club took possession last month of their new and elegant rooms at No. 12 Union street. The rooms are large, well ventilated and arranged with closest attention to the wants to which they are to be put. The accessories are plentiful, and of the best, and the club is justly proud of the improvement it has made in its affairs. It will send a notably fine collection of its work to the World's Fair.

AT a recent meeting and discussion before the London and Provincial Photographic Association on the question of reversing the photographic image on the negative, it was stated that this might occur on some plates and not on others, and one speaker referred to a photo-mechanical printer who claims always to have used this method for obtaining reversed negatives. This statement should open the way for some experimental work in that direction on this side of the water.

WE note that Mr. F. E. Ives has so far perfected his heliochromoscope as to have put it upon the market in such shape as to be available for use on the parlor table or elsewhere. It is in appearance not unlike a kaleidoscope tube inserted in a handsomely finished box, on the opposite side of which are three openings for the admission of light through the different-colored glass screens. Specially prepared slides or chromograms are furnished for use with the instrument.

THE Newark Camera Club is busy making ready for its winter's work and is showing a healthy growth and active interest in its labors. It is proposed to gather in such records of the forthcoming Columbian parade in New York City as are possible with the camera, and they will doubtless, if the weather is fine, procure many valuable views.

AN arrangement of two mirrors at the sides and a third at the top of a colored photographic print on albumen paper has been effected by H. Baudran by which the correct colors of the subject are said to be reflected with recognizable distinctness on a screen in the shape of an enlargement. When the amount of light admitted is reduced by a diaphragm in the lens, the outlines of the pictures are, of course, reduced in strength; but, on the other hand, the colors are said to be made stronger and more brilliant.

ANOTHER terrible warning comes to the careless who handle large quantities of ether, in the report of the recent horrible accident at the laboratory of

M. Chapron in Paris. It seems that he had the misfortune to drop a carboy of enameling collodion, the vapors of which were communicated to a stove in an adjoining room, immediately upon which an explosion followed; other vessels of the same chemical then took fire and much damage and loss of life resulted.

THE first annual exhibition of prints by the California Camera Club occurred in the beginning of September, and was, as all their affairs are, a great success. Several hundred prints were shown to a large and enthusiastic audience. On the 9th of the month, the club enjoyed the hospitalities of the Oakland Canoe Club, where, no doubt, they obtained plenty of material to make good the hospitality extended them. On the 13th September the annual slide exhibit of the club took place, and was successful, both socially and financially.

It is well before copying foreign works of art to look up pretty thoroughly the copyright laws bearing on same, as the International Copyright Law lately put into effect makes the reproduction of certain things pretty expensive business, and, in a case of this kind, an ounce of precaution is worth many copies of interdicted pictures.

LETTER FROM GERMANY.

BY DR. H. W. VOGEL.

Manganese Salts in Photography.—The Action of Diffused Light on Color-Sensitive Plates at Different Seasons and in Different Weather.—The Action of the Toning and Fixing Baths—a New Formula for Them.—The Keeping-Qualities of Prints Toned in Such Baths.

WE live at present in a dead season, in which at former times conventions of all kinds usually took place, offering much useful information. The master of the dead, the cholera, has unfortunately made its appearance, in consequence of which quite a number of conventions have been postponed. But photography still moves on, and all nations seem to contribute their mite to its progress.

One of the substances which are light-sensitive, but have only recently been successfully tested by Lumière, is manganese, in its connection with permanganate of potassium. Whether its introduction will be permanent, remains to be seen, because there is a wide space to be traversed between the laboratory and its practical introduction at the gallery. After numerous experiments with all possible compounds, Lumière has come to the following formula:

Put into a flask, at 15 degrees—

| | |
|--------------------------------|----------|
| Permanganate of potassium..... | 6 grams. |
| Distilled water | 50 c.c. |

And add gradually—

| | |
|------------------------------|----------|
| Lactic acid (D = 1,225)..... | 16 c.c. |
| Potassium formate..... | 3 grams. |

The solution is filtered and poured into a stop-cock funnel, which is in a laboratory illuminated only by gas.

Now, let a sheet of lightly gelatinized paper float upon the surface of some of the liquid drawn off. After about a minute the surplus of the sensitive solution which adheres is removed by putting the sheet between blotting papers. Protected from dust and light, it is then suspended, to dry.

The exposure must take place under a positive picture. If the paper was well prepared, the time of exposure may be of just a little longer duration than with albumen paper. When the depths or bright lights of the print are completely discolored, the sheet is immersed in a solution of para-amidophenol hydrochlorate (1.20). The print obtains quickly the suitable intensity, and there remains only the washing out of the surplus of soluble salts which may be contained still in the paper. This requires only a few minutes.

The weakly yellowish tone assumed by the picture can easily be removed by diluted muriatic acid.

After a subsequent washing, the picture is further treated like an ordinary silver print.

Photographic prints made in this way have not shown the least change after a three weeks' exposure to sunlight. I believe that the process will be of interest for light tracing.

| NUMBER. | PLACE AND YEAR. | DATE. | HOUR. | WEATHER. | EXPOSURE. | COMPARISON. | COMPARISON. | COMPARISON. |
|---------|-----------------|----------|------------|--|-----------|--------------------------------|------------------------|---------------------------|
| | | | | | | Ultramarine and chrome-yellow. | Minium and dark green. | Minium and Prussian blue. |
| 1 | Berlin. | Sept. 20 | 2¼ P. M. | Quite blue sky. | 5" | Ultr. > chr. | Min. > d. gr. | Min. = pr. bl. |
| 2 | 1890 | Sept. 23 | 2¼ P. M. | Quite blue sky. | 5" | Ultr. = chr. | | Min. > pr. bl. |
| 3 | 1890 | Sept. 24 | 1¼ P. M. | Quite gray sky. | 5" | Ultr. = chr. | Min. = d. gr. | Min. > pr. bl. |
| 4 | 1890 | Sept. 25 | 2¼ P. M. | Blue sky, large white clouds. | 10" | Ultr. = chr. | Min. > d. gr. | Min. > pr. bl. |
| 5 | 1890 | Sept. 26 | 2¼ P. M. | Gray sky before rain. | 10" | Chr. > ultr. | Min. > d. gr. | Min. > pr. bl. |
| 6 | 1890 | Sept. 27 | 4.50 P. M. | Gray sky. | 20" | Ultr. > chr. | D. gr. > min. | Min. = pr. bl. |
| 7 | 1890 | Sept. 29 | 10 A. M. | Cloudy, afterwards large white clouds. | 5" | Chr. > ultr. | Min. = d. gr. | Min. > pr. bl. |
| 8 | 1890 | Oct. 2 | 3 P. M. | White clouds surrounded by gray. | | Chr. = ultr. | Min. > d. gr. | Min. > pr. bl. |
| 9 | 1890 | Oct. 7 | 3 P. M. | Gray sky, raining. | | Chr. < ultr. | Min. > d. gr. | Min. > pr. bl. |
| 10 | 1890 | Oct. 9 | 3 P. M. | Purely blue sky, strong moisture. | 8" | Chr. = ultr. | Min. < d. gr. | Min. > pr. bl. |
| 11 | 1890 | Oct. 15 | 3 P. M. | Blue sky. | 8" | Chr. > ultr. | Min. = d. gr. | Min. > pr. bl. |
| 12 | 1890 | Oct. 17 | 3 P. M. | Gray and white clouds. | 10" | Ultr. > chr. | D. gr. > min. | Min. > pr. bl. |
| 13 | 1890 | Oct. 18 | 2¼ P. M. | Blue sky, chasing white clouds after rain. | 7" | Chr. > ultr. | Min. > d. gr. | D. gr. > pr. bl. |
| 14 | 1890 | Oct. 19 | 11 A. M. | Gray sky. | 7" | Chr. > ultr. | Min. < d. gr. | Min. = pr. bl. |
| 15 | 1890 | Oct. 20 | 3 P. M. | Gray sky. | 7" | Chr. > ultr. | Min. < d. gr. | Min. = pr. bl. |
| 16 | 1890 | Oct. 22 | 3 P. M. | Gray sky, partly raining. | 10" | Chr. > ultr. | Min. < d. gr. | Min. = pr. bl. |
| 17 | 1890 | Oct. 23 | 3 P. M. | Gray sky. | | Chr. = ultr. | Min. = d. gr. | Min. > pr. bl. |
| 18 | 1890 | Oct. 24 | 3¼ P. M. | Gray sky and raining. | 10" | Chr. < ultr. | Min. < d. gr. | Min. > pr. bl. |
| 19 | 1890 | Oct. 25 | 3 P. M. | Gray sky. | 10" | Chr. > ultr. | Min. = d. gr. | Min. > pr. bl. |

It is already a well-known fact that the action of daylight on color-sensitive plates of the same preparation differs considerably. The late young Boissonnas (St. Louis) called attention to the fact that yellow objects do not act as well under a blue sky as under a sky with white clouds. I made the same observation. It is now of easy comprehension, that green, yellow or red colors will act so much better, as daylight contains more yellow, green or red light. Sunlight contains considerably more yellow rays than ordinary daylight, therefore sunlight is always preferred for reproductions of oil paintings. Unfortunately, this is not at our disposal everywhere, and we work with different light. The question

how the partly or completely covered sky acts upon colors at different seasons and in different conditions of the weather, has not been decided yet. To obtain the necessary information about this, I took at different times a view of one and the same color-table on eoside of silver plates. In this way I collected quite a number of results, which would fill almost a book. From this collection I will give here an extract in tabulated form (see page 582). The color abbreviations will easily be understood. The designation $>$ signifies "stronger than," and reversed, $<$ "weaker than."

This table gives materials for interesting comparisons. If we select, for instance, Nos. 1, 2, 4, 10, 11, 13, they offer an opportunity to recognize the color effect of the pure blue sky, and the sky partly interrupted by light clouds; that is, the action of the vapor. By 1 and 2 we recognize that even with a purely blue sky the action is not always the same, which according to No. 10 points to the presence of numerous vapor globules in Case 2*. In a pure blue sky (1) the action of the ultramarine surpasses that of chrome-yellow; the action of the minium reaches only that of the dark Prussian blue. In presence of white clouds (4), chrome-yellow was equal to ultramarine; minium surpassed Prussian blue. Strong vapor in a blue sky (10) had the same action, only the action of green showed itself weakened. In the presence of small clouds this improved again. In the presence of swiftly moving white clouds the minium was superior again to the dark green. But even in a covered sky there are surprising differences.

Examples 3, 5, 6, 7, 8, 9, 12, 14 and 19 teach us that here in the majority chrome-yellow surpasses the ultramarine; in some cases (3, 8, 17) they both act equally strong, and only in a few cases, in rainy weather (9, 18), the ultramarine acts stronger than chrome-yellow.

But in most cases (exception 6, 13, 14, 15, 16) the minium acted stronger than Prussian blue; in two cases (6 and 14-16), the action of both was alike. The dark green shows more variation; in five cases (4, 5, 6, 9, 13), it is behind the minium; in four cases (3, 7, 11, 19), it equals the same, and surpasses it in three cases (10, 12 and 18). I have made now, also, quite a number of views at different times of the day. I have not prepared a table for them, but will point out only the important fact that the blue action of the diffused daylight increases after sunset.

The prevailing opinion that the action of the warm colors after sunset is more favorable than at noontime is therefore a mistake.

Still, the increase of the blue with the zenith distance is not constant, and there is by no means any equality of action at equal distance from noon. These results confirm completely those obtained spectroscopically. It is surprising that during the hours before noon, for instance, at 8 A.M., almost always a better yellow action prevails than during the afternoon hours at 4 P.M.

It is, therefore, also a mistake of our photometry to derive from the total brightness of daylight the determination of two parts of daylight (red and green) by application of a certain formula.

It would be very desirable if these investigations would be continued by a

* If the atmosphere is observed from elevated points, *e. g.*, from the Rigi-Kulm (Switzerland), the lowlands of Luzerne can oftentimes be recognized quite clearly; the highlands, on the contrary, have a misty appearance. Reversed, it is mostly the case that when the highlands appear clear, there is fog in the valley. Thus, the vapor appears sometimes in the highlands, at other times in the valley, or half-way, similar to fog, which we recognize at great height as clouds, and is composed of nothing but vapor globules.

greater number of observers, and in different places and at different elevations; then we will obtain gradually a more complete picture about the color brightness of the atmosphere.

For several years the so-called tone-fixing baths have met with much favor among amateurs, although just doubts have arisen about the durability of the pictures toned with the same. About the chemical action of these tone-fixing baths very little has been said. An investigation of Valenta gives now some interesting information about these, and subjects them to a critical examination. He says :

Concerning the action of ammonium sulphocyanide and potassium sulphocyanide in the tone-fixing baths containing gold, it is in first case that of fixing ; besides this, these salts counteract the quick decomposition of the hyposulphite compounds, and effect, as already mentioned, a prolonged durability of the tone-fixing baths, produced by their aid.

The action of these tone-fixing baths, consisting principally of fixing soda, sulphocyanide compounds, lead salts, chloride of gold and alum or citric acid, which bodies, as can be seen from the formulas, are contained in the most general tone-fixing baths for chloride of silver emulsion papers, is explained by this author as follows :

1. Hyposulphite of soda and sulphocyanide both act as fixing agents. These latter, employed with chloride of gold alone as a toning bath, give frequently pictures which show different color-tones in the lights and shadows, and fix unsatisfactorily. Applied simultaneously with hyposulphite of soda and gold salts, these defects are avoided and good fixing and agreeable tones are obtained. Sulphocyanide baths make also the tone-fixing bath more durable, and prevent too quick a decomposition of the hyposulphite compounds.

2. Acids, particularly citric acid and acetic acid, act in such a way as to decompose the fixing soda and thus give rise to the formation of sulphide of silver upon the picture film.

3. Alum and lead salts act similarly ; here, the toning process is based principally upon the transformation of the silver picture into dark sulphide of silver.

The alum, however, hardens the film in gelatine pictures, and appears, therefore, justified in this case in connection with lead salts.

The lead salts act in a manner that they unite with the hyposulphite of soda. The hyposulphite of lead, so formed, dissolves in excess of hyposulphite of soda, and this solution acts in its slow decomposition and tones in consequence of sulphurization of the silver picture. The larger the quantity of lead contained in the solution, the quicker the toning will take place, and the deeper are the tones obtained.

4. Gold salts act in the tone-fixing baths by the formation of hyposulphite of gold and soda, which mixes directly with the silver of the picture, whereby silver passes into solution and gold is deposited upon the picture film. If, now, simultaneously, lead or alum are present in a toning-bath, the sulphur toning introduced by these matters will at the same time take place.

Regarding the durability of the pictures, some experiments were made by exposing some simultaneously to the influence of moisture and ozonized air. It was proven that pictures upon celloidin—or aristo paper—which had been toned by means of acid fixing soda solutions or solutions containing alum, did not possess the least durability, changing to gray and yellow after two hours.

Much better results were obtained with the prints toned with nitrate of lead fixing soda solution; they resisted almost double the time and did not change so much to yellow as the former.

The best durability was shown by gold-toned pictures in ozonized air. These were albumen prints, toned in the ordinary gold bath, and pictures upon celloidin and aristo paper, which had been toned in a pure fixing soda chloride of gold bath and then fixed; after a test of six hours they had lost a little in brilliancy, but could show still a good photographic tone.

As a generally applied tone fixing bath, the following can be recommended after the investigations:

| | |
|-----------------------------|------------|
| Fixing soda..... | 200 grams. |
| Ammonium sulphocyanide..... | 25 " |
| Nitrate of lead..... | 10 " |
| Alum..... | 20 " |
| Water..... | 500 c.c. |

Dissolve, first, the fixing soda in water, add the ammonium sulphocyanide, then the alum and finally the nitrate of lead (dissolved in water); heat to about 50 degrees C., let precipitate settle, filter and add for use to each 100 c.c. of this concentrated bath 7 to 8 c.c. of a 1 per cent. chloride of gold solution and 100 c.c. of water.

The bath is durable and works very satisfactorily. Collodion prints should not be washed before toning and fixing; gelatine prints should have only a short washing in pure water and should then be placed at once in the the tone-fixing bath. To dilute the concentrated bath, an old diluted gold bath, containing little or no gold, may be employed to advantage.

BERLIN, September, 1892.

COPYING OLD PORTRAITS.

BY ELLERSLIE WALLACE.

THE copying of portraits, particularly portraits of deceased persons, is a lucrative branch of regular photographic business. Aside from the money consideration, it is also well worthy of attention from the humanitarian and historical standpoints. I believe the latter to be sufficiently well understood and admitted to require no further mention.

The expression "copying portraits" may be made to include the photographic treatment of vast varieties of pictorial matter. Supposing that the photographer was commissioned to copy a quantity of originals in the form of engravings, etchings, drawings or the like, the task would present no great difficulties from the photographic side. The chief thing to be seen to would be the condition in which the originals were. If the engravings had been kept flat, as in portfolios or frames, and were free from the yellow marks of mildew appearing in patches over the paper, everything would be as simple as possible. But when the plate paper on which the older-fashioned engravings were made shows these yellow spots, or, worse yet, the brown stain from cheap backboards in the frames, which are saturated with resinous material, there will be trouble. As a matter of course, the brown portions will appear much lighter in tint on the negative, and will have to be laboriously retouched so as to harmonize with the rest, if a presentable result is desired. If work of this kind is to be done by contract, a generous allowance should always be made for the retouching.

It will sometimes happen that a lot of engravings have become soiled by their faces coming into contact with one another without any tissue paper between. In this case the ink spreads or is transferred over from the one to the other, and the lighter portions become tawny and dirty looking. Now, nothing is easier than to clean such soiled engravings, and it should be done as follows : Take a quarter of a loaf of stale bread, and having cut off the hard crust with a sharp knife, wash the hands perfectly clean, make a ball of the crumb with a few drops of water, and work it about between the palms until it is perfectly smooth and has a consistence like stiff putty. Now, pull off a portion, and, having laid the engraving flat on a table in a good light, gently pass the bread-ball over it as nearly as possible in the direction of the lines of the drawing. The dirt and ink will all come off without in the least affecting the engraving, even in its most delicate portions, and the soiled high lights will again appear as pure and clean as when the picture first left the press. No grease of any sort must have touched the bread. Plain bread made without milk or shortening, and free from even a trace of butter, is what is wanted, and the ball must not be made too wet so as to cockle the engraving. If there are marks, however, that resist this mild treatment, recourse may be had to the india-rubber eraser. This, it must be borne in mind, is not free from danger, from the fact that the rubber actually removes a portion of the surface of the paper, so that very fine lines might easily be rubbed away if much pressure was laid on. Bread crumb is merely an absorbent of the superficial dirt and dust on the picture, and is not firm enough to remove any of the surface, even when hard rubbed. If india-rubber is employed, select the finest and softest obtainable, and cut it away to a blunt point. Also have a piece of clean, fine sandpaper ready, and, after every few strokes of the rubber, work off the blackened portion on the tip by a few passes on the sandpaper, which will leave a fresh surface for the next application.

Portraits on ordinary albumen paper vary in quality, and sometimes will do fairly well when copied. Supposing that the original is not too much faded, and has been kept clean, it will yield a tolerable negative if exposed upon in diffused light ; and care should be taken that the negative be not forced to too great density, but left soft, so as to give a harmonious print. If the original has been much handled or carried about, the surface of the paper will be soiled and perhaps roughened. Such a print may be advantageously rubbed over with the lubricator used before burnishing, or with the so-called encaustic paste of wax and turpentine, which will clean the surface and brighten it up. A few passes through a rolling-press will be a good thing ; but we do not advise that the ordinary burnisher be employed, as it gives too glossy a surface, and creates an inconvenient amount of reflected light when the print is set up before the copying camera.

If permission can be obtained from the owners, the following plan is a very good one to follow, though entailing some trouble. Throw the print into lukewarm water until it leaves the card. Have a clean sheet of thin plate glass in readiness, and pass it under the print. Then bring the two out together, and having seen that there are no air bubbles present, wipe off the face of the glass, and make the copy immediately before the print has time to dry. The brilliancy of the wet print, and the fact of the surface of the picture being in optical contact with the glass, will do much toward making the copying easy and success-

ful. It may be well to say, though, that very old prints, or those made on very thin paper, should not be subjected to this rather heroic proceeding.

A really good daguerreotype gives an excellent copy, all that is necessary being to get it in the right light. The fineness of definition and chemical perfection of a good daguerreotype image are unrivaled by any of the achievements of modern photography, and we may remind our readers that these qualities are so prized by certain scientists that they use the daguerreotype for astronomical photography to the exclusion of all other processes. But the average daguerreotype portrait, which will be brought into the gallery to copy, is no such piece of perfection. As it would hardly do to attempt the negative through the covering glass, the operator must go through the rather ticklish operation of unmounting the portrait, and if the surface be covered with the peculiar deposit that is apt to form on it, this may be removed as follows: After a preliminary rinse under the tap, and draining, hold it as near the mouth as possible without scratching the picture with the beard, and cover the surface well with saliva. After allowing this to remain on a short time, rinse it off and apply a very weak solution of cyanide of potassium (say, 2 or 3 grains to the ounce) for a moment, then wash again and dry. It is the custom of some operators to apply the saliva directly to the picture as soon as it is unmounted. Singular to say, tobacco in the mouth has no bad effect. It is possible, though, to omit this unpleasant operation. In drying, the picture should be held by one corner with a pair of pliers, and very gently heated over a spirit lamp. When it begins to dry at the upper corner, take a full breath and gently blow on the surface until the drying is complete. Any check in the drying will create an ineffaceable mark on the picture. The final wash should always be of distilled water.

None of this trouble will be had when handling ferrotypes or old-fashioned ambrotypes. This latter form of picture—being in fact nothing more or less than a weak negative—may often be used as a negative, and thus made to yield a very fair positive or opalotype. It might be possible, by judicious working, to make a reproduced negative with rather more vigor than the original, and obtain passable paper prints from it. As we write, we remember a case where a very successful opalotype was thus made from the original ambrotype, to the unbounded satisfaction of the owner, who was not aware that such a thing could be accomplished by photography.

The difficulties of copying paintings in oil or water-colors, formerly so great, have been materially lessened by the introduction of orthochromatic plates. But I can only regard this matter as being in an undeveloped state. If a number of paintings had to be photographed, there would be certain predominating colors in each, and it could not be expected that plates prepared from one and the same emulsion would yield equally perfect results on all. For those who can afford the time and not grudge a little labor, I should advise a trial with collodion emulsion, the plate being steeped in a solution of the orthochromatic dye purposely selected for the particular color to be dealt with. The colored screen might be used or not as circumstances dictated. Any length of exposure could be given, and a few carefully conducted experiments of the kind would serve as a useful guide for future work. It is hardly necessary for me to remind practical photographers that portraits in oil present the most extreme varieties of tone and color, and that in order to secure the full benefit of the orthochromatic principle, some selection of the dye to correspond with the work in hand should be made.

Those whose business justifies the getting up of apparatus without special regard to the expense involved, will of course possess all necessary appliances for holding the original in position and getting it to center accurately on the ground glass ; but to those who work in a small way, I should like to recommend a simple thing that has proved itself wonderfully useful to me. Having accurately measured the height of the window-sill in the workroom I procured a board 6 feet in length and wide enough to hold the camera, and adapted to *one end* of it two light cross-legs of a height just sufficient to make the board level when its other end was supported on the window-sill. Having taken care to set the legs on at a perfect right angle, I could turn the whole thing upside down, and by resting a board holding the engraving to be copied against the upright legs, and setting the camera in position, perfect rectilinearity of line in the copy followed as a matter of course. The whole affair when used in this way was supported on a firm table. When standing in its original position with the free end on the window-sill, I used it for holding the cameras when making lantern-slides by daylight, and, when printing, to hold the frames before and after exposure. Being perfectly rigid and steady, it answered very well for trimming prints upon if the other tables in the workroom happened to be crowded. Finally, when not in use, it could be stowed away in an odd corner with its 6-foot long upright against the wall, occupying almost no space at all. To any amateurs who may be compelled to work in small apartments, I can recommend this simple article as being very handy and very cheap.

The photographic work in copying is simplicity itself. The lens ought always to be focused with a large opening so that everything is distinctly seen, and then a small stop put in to distribute the definition evenly. The exposure should be rather full, so as to secure all the detail in the shadows, and the development must be stopped before the lights are overdone, even if the negative comes out thin and flat in consequence. If this happens, the plate must be strengthened after fixing by any of the well-known means. Two qualities should always be sought for in negative copies—the one, freedom from granularity caused by light striking the original at a wrong angle ; and the other, softness and detail in the negative rather than strength and harshness.

[From *The British Journal of Photography*.]

PHOTOGRAPHY AND METEOROLOGY.

At the meeting of the British Association at Edinburgh, the Mathematical Section received the second report of the Committee, consisting of Mr. G. J. Symons (Chairman), Professor R. Meldola, Mr. J. Hopkinson, and Mr. A. W. Clayden (Secretary), appointed to consider the application of photography to the elucidation of meteorological phenomena, drawn up by the Secretary. The following are passages from the report—

Your Committee report that the work has been continued during the past year along the lines laid down in the report for 1891.

Considerable additions have been made to the number of observers from whom assistance may be expected, in spite of the removal of several names from last year's list.

The total number of photographs received up to July 23 was 361, representing a variety of phenomena, but chiefly illustrating the results obtainable in cloud photography by various methods. This number, however, does not adequately represent the

progress made, for many other photographs have been promised, and will in all probability be received in a few weeks.

The adoption by the majority of the International Meteorological Congress at Munich of the classification of clouds, proposed by Messrs. Hildebrandson and Abercromby, suggested to your Committee that it would be well to adopt it also, at least provisionally. They cordially agree with the action of the English delegates at the Congress in opposing the acceptance of a system which is entirely empirical; but, since the great majority of foreign meteorologists have determined to employ it, your Committee consider that they should adopt it provisionally. They consider it will be well to follow the example set by other countries until the further study of cloud forms, and their relation to one another, renders it possible to make a more scientific code.

Arrangements have therefore been made for the cataloguing of the collections of meteorological photographs in the possession of the Royal Meteorological Society, and of the Chairman of your Committee.

PHOTOGRAPHS OF LIGHTNING.

Very few new photographs have been sent in as yet, but from Mr. J. H. Bateman two of great interest have been received. Following the suggestions in the instructions issued last year, two cameras were employed, the first being stationary, and the second moved rapidly from side to side. The plate exposed in the fixed camera shows four flashes, while the one which was moved shows six. A flash which is single on the fixed plate is resolved into three on the moving plate, showing that the flash did consist of a series of discharges along much the same path. The absence of reduplication in the others points to the conclusion that they were single. Two of these single flashes occupy exactly the same relative positions on the two plates, showing that they must have been simultaneous.

Your Committee regret that there should have been no opportunity of carrying out any further experiments upon the phenomena presented by lightning photographs. However, recent discoveries concerning high-tension discharges ought to elucidate the subject. Thus it seems highly probable that the hazy continuous luminosity shown by many photographs may be due to the flame of burning nitrogen.

Before leaving the subject of lightning, it may be pointed out that in Mr. Bateman's photographs the narrow-ribbon structure in each flash is no more pronounced in the moving photograph than in the one which was stationary.

The Royal Meteorological Society has received several new photographs of lightning. They all show the narrow-ribbon structure; one shows reduplication of the images of some chimneys, as well as the flash; while another shows a bright flash and several dark ones. Of this last, Mr. Robert Law, who took the negative at Melbourne, remarks that there were two flashes, the second reversing the image of the first.

METHODS OF CLOUD PHOTOGRAPHY.

The information at the disposal of your Committee does not, as yet, seem sufficient to enable them to pronounce definitely in favor of any one method as the best. They have made some progress in ascertaining the methods adopted abroad, and also in experimental work at home. The subject divides itself naturally into two sections, dealing respectively with cumulus or heavy clouds, and cirrus or other light clouds.

Cumulus.—With all heavy clouds it is certain that admirable results may be obtained with a little practice in adjusting the stop and length of exposure. So far as the quality of the results obtainable is concerned, there does not seem to be any manifest advantage in the use of a colored screen, of a black mirror, of specially slow or of orthochromatic plates. Nevertheless, it is quite certain that results of a given excellence are more easily obtained on a slow plate with a strong developer considerably restrained. It is equally certain that the use of the colored screen or of the black mirror renders the process easier still.

With correct exposure and careful development, it should not be necessary to resort to intensification of the image. If some such treatment should be required, inexperienced observers should be warned that in the use of mercurial formulas it is well to keep the plate in constant movement while in the mercury bath, in order to avoid undue granulation of the image.

Cirrus.—Those who have made a special study of the photography of thin clouds appear to be agreed that, in order to bring out all the details of their structure, some special device must be adopted.

By extremely nice adjustment of the exposure and subsequent intensification of the image, very fair results can be sometimes obtained; but the process is difficult and only practicable in experienced hands.

Dr. Rizgenbach, who first described the black-mirror device, recommends that exposure should be so arranged that the sky leaves practically no impression on the plate, while the thin image of the cloud must be brought out by means of Schlippe's salt (sulphantimoniate of soda).

M. Angot, in a report presented to the Meteorological Society of France, remarks that a black mirror is only advantageous when the cloud is about 90 degrees from the sun. In theory this is, of course, correct, but the secretary to your committee has found that there is a manifest practical advantage in its use for all parts of the sky, including even the immediate neighborhood of the sun itself. M. Angot then goes on to say: The best results are obtained by colored screens, yet the ordinary screens are insufficient. The following formula, due to M. Léon Vidal, gives every satisfaction. In a small glass trough with parallel faces there is placed a solution made with the proportions:

| | |
|---------------------------|------------|
| Sulphate of copper..... | 175 grams. |
| Bichromate of potash..... | 17 “ |
| Sulphuric acid..... | 2 c.c. |

These are dissolved in 100 to 500 cubic centimeters of water, according to the thickness of the trough and the results to be obtained. The sulphate of copper arrests the red rays, and the bichromate the blue and violet. The plates used were Lumière's orthochromatic, and the exposure from .5 to .8 second.

Your Committee regret that they have not yet received any illustrations of the results obtainable by the above means, but it is hoped that an exhaustive trial of the method may be carried out in the course of the coming year.

The Secretary of your Committee has continued the comparative trial of slow and ordinary plates with or without a black mirror. He reports that ordinary plates and direct exposure may often give satisfactory results when the background of sky is a clear deep blue. If, however, it is at all hazy, the correct exposure becomes extremely difficult. With slow plates, however, such as Mawson & Swan's transparency plates or photo-mechanical plates, it is fairly easy to obtain results of high excellence.

With the black mirror ordinary plates give excellent results; but here again, unless the clouds are moving with unusual rapidity, or unless the light is very bad, there is a great advantage in the use of slow plates. It is, indeed, easy to obtain a fairly dense image of any cloud, however luminous and however thin, by the combined use of mirror and slow plate. Such means give abundant detail and full gradation of light and shade, even when the sun is actually in the field of view. Exposure would vary from about .2 to about .8 second with an aperture $f/11$.

The developer used in all these experiments is the familiar formula with pyrogallol and sulphite of soda considerably restrained.

Special attention should be drawn to the admirable series of cloud studies presented to the Committee, which were taken by Signor Mannucci at the Vatican Observatory under the direction of Padre Denza, S. J. These show what can be done by direct exposure, Signor Mannucci recommending a slow plate for the more difficult

subjects. The pictures taken by the Secretary to your Committee in a similar manner show the value of the slow plate and black mirrors.

MISCELLANEOUS PHOTOGRAPHS.

With regard to miscellaneous photographs of meteorological interest, your Committee regard with some satisfaction the number of pictures they have been able to secure which show the violence and severity with which the great blizzard of March, 1891, visited the southwest of England. They believe it is of great importance that fairly complete pictorial records should be kept of all such abnormal events.

They are also pleased to be able to report that several of the photographic periodicals have recently manifested considerable interest in the work, one paper having just offered a series of prizes for the best meteorological studies, the editor having offered to present any competing pictures to your Committee. Several photographic societies are also taking the matter up, and your Committee hope that the effect of such powerful aid may rapidly make itself felt, both by increasing their collection and by adding to the number of contributors.

In order to show the widespread interest already taken in the subject, the catalogues of the three principal collections are appended.

In conclusion your Committee ask to be reappointed with a grant of £15, in order to follow up properly what they regard as a satisfactory start.

[From the *British Journal of Photography*.]

PHOTO-ZINCOGRAPHY.

FROM remarks we from time to time hear, and from queries received of late with reference to photo-zincography, it is clear that not a few are under quite a misconception as to what is photo-zincography. The queries, as put, more often than not refer to another process in which zinc forms the printing matrix. What is so often confused with photo-zincography is the zinc etching, or, as it is more frequently termed in the trade, the "zinco" process. The two processes are totally different both in principle and in practice. The one is for the production of blocks in relief for printing in the typographic press, whereas the other is a surface-printing method by which the impressions are obtained after the manner of lithography. With a view to clearing away this confusion, we shall give a brief description of the photo-zincographic process proper, when it will be seen how widely separated it is from the process with which it is so often confounded, even by some who work it or are experimenting with it; while, at the same time, it will also be seen how very closely photo-zincography is allied to photo-lithography.

It may be explained at once that the practice of photo-zincography, like that of photo-lithography, is principally confined to line subjects. The former process, it may also be mentioned, is not worked commercially, or ever has been, to the same extent as the latter. Why this is the case it is somewhat difficult to surmise, unless it be that this class of work has principally gone into the hands of lithographers who were more familiar with the manipulation of stone than zinc. It is quite conceivable, however, that had the commercial working of the process in the first instance been taken up, as it really ought to have been, by photographers, as the essential parts of it are purely photographic, the metal would have been preferred to stone. The process is, however, extensively employed for the production of maps, and for other purposes where fineness and delicacy of detail are necessary. All our ordnance maps, for instance, in which, of course, extreme fineness is an essential, are produced by this process, and so are those of some foreign and colonial governments.

Zincography, like lithography, as most are aware, is based upon the antagonism of grease and water, and that the first thing to do is to obtain the photographic image, whatever it may be, in a greasy material. For this purpose advantage is taken of

chromated colloid substances, which it is tolerably well known to all our readers becomes insoluble, or non-absorbent of water, on exposure to light. In the early days of this class of work the sensitive body was applied to the metal or stone, and that exposed direct behind the negative. This system obviously was attended with great disadvantages. Pressure frames containing large metal plates or stones were, it is needless to say, very inconvenient to handle, and, moreover, a difficulty was found in getting perfect contact with all portions of the image. After a time this system was abandoned for the transfer method—the one now universally employed.

There are several different ways of producing the transfers, each of which has its advocates, though all are based upon the same principle. One method is to coat a fine surface paper with albumen, gum arabic, or other similar substance, or a mixture of two or more of them, containing bichromate of potash or ammonia. When this coating is dry, the paper is exposed behind the negative until a strong image is obtained on the pale yellow ground. The paper is then coated uniformly with a fatty ink. Specially prepared photo-transfer ink is now supplied by all large dealers in printing materials, and this, tinted with turpentine, answers very well, though some workers still prefer to make their own transfer ink. After inking, the paper is floated on cold water, which dissolves the coating where the light has not acted, bringing the ink away with it and leaving the design perfect in ink on the hardened colloid material.

In place of employing gum or substances soluble in cold water, gelatine is more generally used. It always is at the Ordnance Survey Office, Southampton. When the image is printed and the paper inked up, it is floated on tepid water until the unacted-upon-by-light portions swell up; then the coating is treated with hot water, to dissolve them with the ink away. Hence, the same end is arrived at as when albumen or its analogues are used—namely, the lines in greasy ink on a hardened colloid body with bare paper for a ground.

Instead of treating the inked-up print, after soaking in cold water, with hot water, the ink is by some workers removed from the unexposed portions by gently rubbing with a soft sponge or brush and copiously washing with water. When the unacted-upon gelatine becomes saturated with water, it has no longer any affinity for the greasy matter, while those portions that have been exposed to light still hold it tenaciously. Here is another method. In place of inking up the print direct as it is taken from the negative, it is soaked in cold water and then blotted as dry as possible. Then the ink is applied, when it adheres only where the light acted. It will be seen that in the two latter methods the colloid film remains intact on the paper, while in the former ones it exists only where it has been modified by light.

With regard to the application of the ink to the exposed film, there are several ways of doing this. Some prefer to use a dabber, some a soft roller, such as the velvet roller, while others apply an even layer of the ink, in the first instance, to a zinc plate or a lithographic stone, and then pass the undeveloped print several times through the litho press in contact with it. By whatever means the fatty image is obtained, the after-operations of transferring and printing are the same.

After the transfer has been dried, it is placed between sheets of damp blotting-paper until it has become quite moist. A zinc plate, that has been planished and finely ground, and made perfectly clean, is placed on the bed of a lithographic press. The moistened transfer is then laid upon it with a few sheets of paper as a backing. The whole is then passed several times through the press, the pressure being increased each time. Next, the back of the transfer is wetted with water and the paper taken off, leaving the ink forming the image firmly adherent to the plate. After washing with water, to remove any adherent fibers of paper, the surface of the zinc is treated with dilute phosphoric acid, gum arabic, and nut galls in water. After remaining on for a few seconds this is washed off, and the plate is ready for inking up and printing from, either in a hand or a power press, just as if it were a lithographic stone.

From the above brief description it will be seen how widely different is photo-

zincography proper from what is commonly known as the "zinco process," and also how closely it is allied throughout all its manipulations to photo-lithography, so much so, that it becomes practically identical with it, except that metal is employed in place of stone.

Mention was made in an early part of this article that zincography is less extensively employed in commercial work than lithography. This may possibly, to an extent, be accounted for by the fact that less skill is required in printing from stone than from zinc; though it is claimed for the metal that in skilled hands it yields finer and more delicate results than can be obtained from the stone.

PHOTOGRAVURE.

BY A. DAWSON.

[Photographic Society of Great Britain.]

(*Continued.*)

METHODS OF ECONOMIZING.

FOR a book of small or moderate size, the old method of grouping four subjects on one plate is good; for one pull of the press, and just a little more time at inking, produces a lot more prints, and the printing cost can be brought down to, say, half of the former figures. The cost of making the plate with four pictures on it is, however, no less per subject—probably more.

Another method is by printing several subjects quite close together on thin China or Japan paper, and then cutting up the sheet by hand and inserting where required. This, though not economical to the extent one would wish, opens up methods of accommodation of great value. Thus prints may be made long before the book is ready, and they can be used for any purpose or book by simply pasting them down.

You can put the prints by for years, and when the list is complete you can print the book. The book is printed with the blanks, and that work is cheap; but if you try to print in these blanks from the press, you would find it extremely expensive. We have tried it for a Scotch publisher; but it was no use, it could not be done. The best way is to print on very thin paper—China paper, preferably—and then paste them in. You cannot put a thin paper through the press and expect it to print. You have to put a piece of thick paper at the back, and then it will take the ink.

The printer has to use a backing of thick paper to get a proper impression on the thin, so that economy is not apparent unless five or six are on a plate; and, if they are neatly brought together, they can be cut up for a trifle. Then comes inserting or mounting, for which no great skill is required, so that you can get very cheap labor—girls, for instance—for it. Drying the sheets flat is yet another expense, and it seems either to want redamping to do this, or to have them already damp when the pictures are inserted. This all costs something, yet with a willing staff and a good shop it is inexpensive and certain.

The large work by W. J. Linton, a copy of which is here, is got up in this manner, the subjects being grouped on the plates and then printed on thin China paper, and so cut up and mounted. The same method may be used for the many little elegancies which are now so much in vogue—memorandum cards, birthday cards, etc., subjects being stocked in a cut state ready for mounting on cards or leaflets of any size or shape or kind. Collotype, of course, gives some idea of copper-plate work; but, unless it can be printed on the thin paper and without any gloss, it cannot have the rich, velvety character of an intaglio print.

The great point is that, however thin the paper, you can get the rich effect of the print upon it; there is no inferiority. (The pictures in the "Life of Samuel Palmer" were quoted as an instance.)

I have dwelt rather long on this branch, because of its true importance, it being charged in every phase with questions of economy and the balancing element of quality, how much quality to how much money? That is the question for to-day in every business.

Speaking before photographers, I may record my surprise that photogravure portraits are not more commonly made use of as presentations where a large firm employing numbers of persons desire to remember an honored employer by executing a plate of his portrait, and using the copies as the presentation. Many similar purposes suggest themselves, the favorite secretary or chairman of some association, not to speak of ladies of similar eminence, head masters and principals of schools and colleges, officers, captains of ships, etc. At present we have heard of Members of Parliament doing something of this kind, but it might go further with great advantage.

ART ASPECTS.

The failure of so much of the old copper and steel-plate engraving follows rather from the business demand than from the artistic, or, at least, it is equally divided. Cheapness was called for, and photogravure plates of a fair quality can be made cheaply, but they cannot be printed cheaper because the process is identical. Line engravings in steel are printed very cheaply, because a clean surface is all that is desired, and steel easily yields it, but steel engravings are slow and hard to produce. Copper etchings are not so hard to produce, but even when steel-faced they generally give trouble through being finished with very fine work. Mezzotint costs a deal to print, but here is the closest rival of photogravure, and it costs, say, twice as much to print as the photographic rival. The artist's own particular feeling is far different, and merits chief attention, because, sooner or later, it is what the artist feels that the public will also feel, and it is right that the creative mind should lead the receptive mind. This being granted, it follows that the artist's idea of a perfect rendering in printing ink should be consulted. When we cannot consult it, it will be needful, on our own responsibility, to render it, not with a mean and niggard neatness, nor with a rough, blundering ruggedness. If I might define the ideal photogravure, I would say that the touch should be clearly perceived, but so also should the transparency or opacity of the original be rendered. This is a hard thing, but let it be remembered that the old mezzotint engraver would, in his best work, give two or more distinct tints, one fine, another coarse on top of it, and the result was increased transparency.

When they rock a plate there is one tint all of one size—that is, when they first prepare a plate. When they scrape that, it is converted into a gradation of one degree. They find it does not hold ink enough. They now take a bigger rocker and go over all that work, and the peculiarity of it is—the rocker that they pass over it having a larger arc—that it goes lightly on the hollows, and the hollows are the lights. In the mezzotint method these (hollows) are the lights, having the little digs in them; these (hills) are the darks, having the deep digs in them. So, that, when the rocker goes over it, it opens the hollows a good deal, so that re-rocking does not destroy detail to the extent that one would think; and a very light scraping over all these parts is easily done, and the result is that you have two tints—a bigger tint and a smaller tint. Now, if you go over the road to that institution (British Museum), you can see in the Print Room all sorts of mezzotint engravings, and you will find that the best are those which are twice rocked; some are even three times rocked, and three times scraped out, and sometimes they rock and scrape out portions only. The consequence is that the old plates were extremely rich—I cannot see my way to do that in processing.

Thus I do not like a hard equal tint in photogravure if it is to render the best result. Rather let one granulation cover another, and one procedure be seen through another. I am very particular about this, because now we approach a very big subject—half-tone in relief. Let one texture be seen through another texture. It is a better thing than graduating the texture according to the color. That is very good, I will

allow ; but every part of the plate should have more than one texture upon it, and then you get transparency. Then, I find the great difficulty in meeting art requirements lies in the narrowness of the photographic scale as compared with that of the painter. Our modern dry plates certainly, when well handled, give a nice range of tone, but the negative is not the end of the work, and in all the physical work which follows I have found the scale much cramped at both ends. I have to make my lights and also my darks to a large extent artificially. We cannot help it. Bichromate, to satisfy an artist, ought to bite into the blacks deeper and deeper as it goes, but it does not—it stops. Where the gradation of light is in a steady ratio, the gradation of printing starts with a fair effort, and then it gradually gets more flat ; and where we want the tones to grow and grow, they do not grow, the reason being generally that it is full of pigment. It is only when there is no pigment in it that you get a really good scale. I steadily refuse to see in work turned straight off at one operation any good result if from a full-toned subject.

Photogravure has now strangely invaded the letter-press department. It is one of the most curious and also most attractive marks of progress to see this thing—for the many blocks in half-tone now made are really photogravure plates in negative form—giving smooth places for black, and rough for light, instead of the reverse ; but, physically, the difference is slight. (Mr. Dawson here exhibited four prints on one sheet, two being on a copper plate, and two on a letter press, remarking that the little plates in the various art brochures now so popular were all identical with photogravure plates, even to a large degree physically. There were differences, but they were slight.) It still remains to be noted that all the previous rules as to detail and transparency must apply, there can be no hard, flinty uniformity in the tint if it is to be approved by careful judges. Of course, some printing by machine is much rougher than others, and always must be ; but it will not alter the proposition. It thus follows that the hard, square, crossed tint, however neat and regular, must be superseded sooner or later ; indeed, regular mechanical work must give place to sympathetic rendering. Of course, this lies in the future, but it presses already, and has pressed ; all artists say, “ I hate that square grain,” and a publisher will say, “ I hate it, too ; but if it must be there, let it be too fine for me to see it.”

It should thus be borne in mind that, when worked with that special view, various methods hitherto employed for making an intaglio plate are suitable for the making of a relief photogravure. The vast bulk of this work is done by the old process of Niepce without any variation, by printing into a thin layer of bitumen, developing and biting out with several stoppings. In France, intaglio plates are constantly produced in this way. There is a large republished series of Albert Dürer, and they are all done in that way ; they are bitten through a thin film of bitumen, and to make them deeper a man goes over them with a graver. The Pretsch process is a simple swelled gelatine surface. It has the advantage of not having pigment in the gelatine. These (shown) are Pretsch plates. Pretsch, himself, died long ago, and, so far as I am aware, no one has ever worked the process but myself. They can be printed in relief as well as in intaglio. Another way is by the Klic process, which renders most of the tints sweetly and consecutively, but is rather fine in the grain, and wants very careful rebiting to produce a printing block. And the worst part of rebiting, however skillful, is the necessary stopping out, which will always show itself. It is the want of a real, true, good method of photogravure in relief which keeps back its employment for scientific work, where it is not lawful to touch with the hand to help out any matter of detail. If a man brings a scientific subject, he wants it correct. He does not want a sight of handwork on it ; it would destroy its value. In anatomical plates it is impossible to have a method that demands the help of the hand. Of course, there is a difference in demanding the help of the hand, and having a little now and then occasionally ; but I do not despair of arriving at this point of perfect reproduction in relief, where management and skill can be made to supersede any mere handwork.

COLOR.

Printing in color shall conclude my rather vagrant paper, but there is a strong affection in the English mind for color in prints, and from the earliest days of printing this has been observable. The missals, which the monks were given to illuminating, were followed by early printed books with the printed illuminations colored by hand.

By the plate method color is most suited to the lighter class of subjects. As the tint gets darker, the color is found to be unable to give the required depth and power unless the plate is correspondingly deep. It, however, remains that the photogravure intaglio plate is the sweetest method yet known for printing in colors. Sometimes a water-color drawing comes out so perfectly that you really cannot tell the copy by the side of it, and, when it is known that this colored copy is a production of the press capable of multiplication, the result is all the more surprising. This way of color printing lends itself to very subtle blendings of tint, such as are quite unknown to other modes; but, although producible in number, they are not very easy to do excellently well, and it is very usual to have to go over them afterwards with water-color. Consequently, they are valuable, and, as prints go, rather scarce; but they are well worth producing, for the simple reason that the photogravure gives us the artist's touch, and this adds the charm of color, thus bringing us very near to the artist. And, as I began, so I conclude, with the keynote that nearness to the artist is the most worthy aim of all reproductive methods. When water-color in its light touches is produced, it still remains to produce oil-color in its power, and very lovely I feel it will be to see this happy result.

It may be asked of me if I see any way of printing naturally reproduced plates with Nature's selected tints. There was a method years ago for doing parcel plates in three or more colors by extracting them from an already prepared plate engraved in the ordinary way. There would be a mezzotint plate, and the areas of green and blue, and so on, were mapped out. Then you would electro copies, and scrape out from one what was not wanted for blue, from another what was not wanted for red, from a third what was not wanted for yellow. The consequence was that, by printing in careful register, you got a very decent color result, and one of my copper-plate printers once used to print them. They were very nice at times, but, of course, entail three or four printings, and register in copper-plate is a very difficult business. The process was patented, and some old printers still living have printed them. The paper was good and strong, so as to print three or four times in the copper-plate press for the various colors without expanding and destroying register. Now, the nature-selected tints will depend on their results upon the limitation of this old, old process. I do not see how there is any way of inking a plate by an automatic method, and, of course, it must be by the medium of printing ink that the thing must be done. I do not see any way of inking a plate in Nature's colors. And, on the whole, I incline towards making a nature monochrome plate and inking it in to taste. It must be remembered that by parcel or register printing on the copper-plate press the delightful plate mark and broad margin are impossible, but by color printing as above described these are preserved.

I must here conclude, but would in doing so throw out a hint that a fair history of the whole of the photogravure process would form an attractive subject for such a society as this, especially if small examples could be given from each. I think examples from the earliest days ought as soon as possible to be got together in a proper form, either as a single album deposited at the British Museum, or multiplied and distributed in the usual way.

At the conclusion of the lecture, Mr. Dawson handed round examples of various processes of photogravure, and the Chairman remarked that the lecturer was so familiar with the different methods that he had referred to them simply as "the so-and-so process," but probably there were many gentlemen present who would be glad of details.

Mr. Dawson thereupon remarked, that all photogravure methods were based upon the autotype process, the Pretsch process being an exception. The Waterhouse method consisted in covering the tissue, when in a state of soft jelly, with sand or ground glass, which produced little notches over the entire surface. When dry, the business was to get the sand off again, and that was a business, for, of course, it was glued on, but the method he had adopted was very simple. He put the sand or glass into a ladle, together with a little knob of stearine or spermaceti, and heated the whole, by which means each particle of sand or glass became coated with the stearine or spermaceti, and, when put on the tissue and dried, could be easily rubbed off. Sometimes it would stick; but, as a rule, it all came away, leaving granulation on the surface. The fault was, of course, that it went up and down too much, and held as much ink in one place as in another. Then, there was the perforated method—his own. Before the tissue was placed under the negative, he rolled a mixture of tallow and stiff oil all over it, and then powdered it all over with bronze powder. In printing the light only got through in the little cavities (shown by diagram), and it developed in little knobs—big knobs and little knobs—producing what he called a perforated mould. The great difficulty was that the picture could not be very well seen on the plate, the little bright remainders were so glittering. The great charm of the Klic method was that the details were clearly visible upon the plate. It was most important that there should be a healthy grain in the plate, and that the details should be clearly visible for working up. The large pictures exhibited were all done by what is called the Goupil method, although it was invented by Mr. Woodbury, an Englishman, and was an English method. He hoped that would not be forgotten. The process was kept strictly secret, but he believed it consisted in the preparation of a pigmented gelatine tissue over-saturated with soluble lumps of some hard salt. After printing, these lumps were dissolved out, leaving the picture like a sponge on the plate. It was undoubtedly the finest method known, and he was sorry it went abroad and that it was concealed. He also drew diagrams on the blackboard to explain the working of the Klic process.

[From *The Practical Photographer*, September 1, 1892.]

THE WORLD'S PHOTOGRAPHERS IN CHICAGO.

It is intended that the Chicago Exposition and World's Congress shall open on May 1st, and remain open till October 30, 1893. It will be the greatest practical demonstration that the world has yet seen of how near we can approach to the ideal of human brotherhood.

Her Majesty the Queen has issued a special Commission empowering the Society of Arts to act as Special Commissioners to the Exhibition. The British Government has voted £60,000 towards the expense of adequately representing the industries and arts of Great Britain. The Secretary of the Commission is Sir H. Treman Wood, M.A., John street, Adelphi, W.C.

Special attention is being given to photography by the British Commission. The photographic committee consists of B. Francis Cobb, The Attorney-General, M.P.; Sir Frederick Bramwell, Bart., D.C.L., F.R.S.; Capt. W. de W. Abney, C.B., F.R.S.; Geo. Davison, James Dredge, Col. Joseph Gale, and H. P. Robinson.

The following particulars of the Department of Photography are extracted from the official *Handbook*.

"All the photographic exhibits, including photographs, process prints and apparatus from this country, will be placed together in the portion of the Liberal Arts and Manufactures Building allotted to the British section.

"As wall space is not available, screens will be fitted up for the exhibition of photographs, photogravures, and other pictures produced by photographic methods; but exhibitors desiring to erect their own screens or stands can do so.

"A collection of photographs, illustrating the best work of amateur and pro-

fessional photographers in the United Kingdom, will be arranged by the Royal Commission. The pictures lent for this purpose will be transmitted to Chicago and brought back thence free of charge to the exhibitors, and the Royal Commission will also undertake their care while they are in the Exhibition.

"Invitations will be sent to a limited number of photographic artists, and it is hoped to be able to get together a collection which will be worthy of the present advanced condition of photographic art in England. Pictures will only be received from those to whom invitations have been addressed. In addition to this selected collection, photographs may be sent by exhibitors at their own cost, and, for these, space will be allotted in the usual way."

We may supplement this by saying that there is no charge made for space, and that those who wish to exhibit photographs in addition to the selected collection, must, of course, make application, and secure allotment of space in good time.

We have to thank every one of our English contemporaries for the prominence they have given to the project. The letters from the States and from Canada are most encouraging, promising our party every assistance and a hearty welcome. Several of the American magazines, and even some of the daily papers, have taken up the matter splendidly, and we thank them in the names of all.

The Hon. Charles C. Bonney, President of the World's Congress Auxiliary of the Exposition, answering our letter, advises us that the World's Congress Committee on Photographic Art will advise us as to what arrangements can be made for a truly international congress of photographers, and says, on his own responsibility :

"You may be sure that the party of English photographers to which you refer will receive a hearty welcome from the leading committee of the Congress, as well as from their American brethren generally."

The Secretary of the Chicago Camera Club, whose letter we quote because his society is the one on the spot, and his letter was the first secretary's letter received, tells us that the rooms of his club will be open to visitors, who will be very welcome ; and that the club intends to get out circulars of useful information, including addresses of those who have darkrooms for public use. He concludes by "wishing you all success in your undertaking, and assuring English camerists a hearty welcome in Chicago."

Our list of those who intend to visit Chicago—unforeseen circumstances excepted—is steadily growing. The first Colonial adherent has come in—Mr. D. H. Davies, of Johannesburg. We have a tentative promise from an amateur in Durban, and our English list includes the honored name of Mr. F. York.

And now a word as to what we do, and do not, intend. Our use for the word "party" has proved misleading, for we do not wish to arrange for the whole of the members to travel by the same steamer, stay the same length of time, and see the same sights. We hope that there will be a number of small parties, but the whole arrangement would be better described as a federation than as a party. We propose that the excursion shall have a definite name, yet to be decided. That members shall have distinguishing tickets entitling them to such privileges as we are able to obtain, and that a programme and book of useful information for photographic visitors shall be issued for their use.

The programme will cover the whole time the exhibition is open, and include :

1. Dates and subjects of meetings of such societies as offer their hospitality to our visitors individually.
2. Addresses and particulars of societies whose darkrooms, libraries, etc., are placed at the service of our individual members.
3. Brief itineraries of the principal cities, with hints as to the objects of interest to be photographed, etc., etc.
4. A directory of photographers and others in the various cities who will be prepared to give information and assistance to our visitors.
5. Full particulars of the World's Congress on Photography, which will be

held during August, and of the Convention of the Photographers' Association of America (July 18th to 21st), which it is hoped that a large number of the Old World visitors will be able to attend.

Etc., etc., etc.

An erroneous notion has got abroad to the effect that visitors entering the United States next year will have to pay duty on their cameras, lenses, etc. We wrote to the Consul-General of the United States on the subject, and he replies as follows :

" H. SNOWDEN WARD, Esq.,

Editor *Practical Photographer*.

"Sir,—In reply to your letter of the 17th inst., I beg to say that cameras in use taken over by the passengers are admitted free as personal effects.

" Your obedient servant,

" JOHN C. NEW,

" *Consul-General*."

Those who join our party can obtain all necessary information on such points as the above, and will have many of the difficulties somewhat smoothed.

In conclusion. We again ask all who even may be able to visit the Exposition to write us at once. It will cost them nothing, and every name added to the list will help us in arranging special facilities for the convenience of all.

RETOUCHING BY ELECTRICITY.

SOME time ago we published in the BULLETIN a series of articles on "Retouching," by Redmond Barrett. Taking these articles as a guide, retouching may be made simple and rapid by the use of an instrument now on exhibition in the store of our publishers. This is a small metal pencil-holder, at one end of which is a little electric motor worked by two bichromate cells. The other end carries the pencil, which is carefully sharpened with fine emery cloth. The holder is supported by a brass spring, the hand, therefore, simply serving as a guide. The cells being connected, the pencil rapidly revolves with a slight wobbling motion.

The negative is rubbed over with Venice turpentine, fixed upon the desk, and all that is necessary is for the operator to guide the pencil. The instrument cannot certainly supply the worker with the requisite knowledge of anatomy, but it gives him the mechanical part, and supplies him with the means to rapidly and delicately carry out his ideas to the desired end. A cabinet bust portrait may easily be completely retouched in fifteen minutes, entailing but little fatigue to the operator.

WATKINS' EXPOSURE METER.

To the Editors of the BULLETIN :

SIRS,—I am glad to see, by Mr. Duffield's letter in your issue of August 13th, that my instrument is being used by thoughtful photographers on your side. An instrument of this kind (besides its value as a means of testing the actual power of the light) is chiefly of use for systematically recording experience, and using these records in the future. It is, however, unable to alter and grind down to a dead level those factors affecting exposure which are inevitably liable to variation, and it is wise to recognize this fact. The chief point to which this remark applies is that of the speed of plates. The speeds given in the instructions were from actual test of samples received from America some eighteen months ago; and if the speeds of plates on your side are as liable to as great

variation as they are in England, the *P* numbers given are not now to be relied upon. In England there has been, during the past year, a very marked increase in the rapidity of some maker's plates, while others do not change.

Again, many makers seem quite unable to keep their plates at a uniform speed; and, in my experience, it is absolutely necessary to test every new batch, and not take for granted that it will be the same speed as the last. I try to keep the English speed list up to date by frequent testing, and I am just about to test a batch of the leading American makes in order to revise the list; but, in using such a list, the facts I refer to must be kept in mind. The remedy would be for all makers to mark each box with a speed number taken from an actual test; but, in my opinion, no reliable sensitometer test, which actually represents the camera test, has yet been devised. Messrs. Hurter and Duffield's plan, so much pushed forward, gives the white light sensitiveness of a plate; but, unfortunately, the light which rules the exposure in nearly all cases is that reflected from a colored object, such as a red-brick wall or grey-green foliage; and two plates, which are exactly equally sensitive to white light, might probably be of very unequal sensitiveness to the colored rays I speak of.

I hope it will be found possible to arrange for more frequent speed tests to be made by some one on your side for use with the instrument, as Mr. Duffield suggests.

Mr. Duffield's remarks about the subject numbers are interesting. Here, again, the *S* numbers should be used to express experience; and when I say that seascapes are *S*/25, and average landscapes *S*/100, I am recording my personal experience that I give four times the exposure for landscapes that I do for seascapes (other things being equal). If another photographer's experience varies from mine in this point, it can be readily applied to the instrument by using a different *S* number.

Yours truly,

ALFRED WATKINS.

HEREFORD, ENGLAND, September, 1892.

SWING-BACK.

DEAR BULLETIN:

I notice that many, both professional and amateur, complain of their lenses cutting off the corners of the plate on either top or bottom. I have come to the conclusion that the error is more in the operator than the apparatus or lens, and if any one who is troubled in said manner will point his lens directly in the direction he wishes the picture to show, and then move the swing-back of his camera until the plate is in a vertical position, he will find he is using the center of the lens, the plate will be covered entirely with equal illumination, and the corners as perfect as any other part. For what other purpose is a swing-back put on a view camera?

Yours truly,

ABE LIZZARD.

OBITUARY.

DONALD RAMSEY.

THE very sudden and particularly sad death of Mr. Donald Ramsey, late Treasurer of the Heliotype Printing Company, of Boston, removes from a large circle of friends one who was beloved by all who knew him. His loss will be

long and keenly felt, not only by those who feel the personal absence of the friend, but by the entire profession allied to photo-mechanical reproductive processes.

Born in Glasgow, Scotland, on March 12, 1848, he began life at the age of ten years as a boy in the printing house of J. W. Robertson & Co., of that city; there he remained some years and then followed the same line of work in both Dublin and Liverpool, coming to this country in 1868, since which time the greater part of his life has been spent in connection with the Helotype Printing Company, where he started as a lithographic transferrer. Gradually rising by dint of perseverance, he finally bought out the company and has been for some years its treasurer and owner. Following his custom of late years he sailed for Europe on the 20th July with his wife and daughter for a much-needed rest and was taken sick before reaching Liverpool. The best of friendly and medical attention was unavailing to give him relief, and on the 6th of September he passed away. True to his strong Scotch nationality, he had often expressed the hope that he might breathe his last in his native land, and his wish came unexpectedly to be fulfilled.

Mr. Ramsay was a poet of no mean ability and several of his writings in the old Scotch dialect are full of sweet and touching thoughts. His life was exceptionally pure and manly, and his character and honesty as firm as the hills that saw him born. His home life was tender and affectionate, and the terrible gap caused by his death will be keenly felt by his widow, two sons and one daughter whom he leaves.

OUR ILLUSTRATION.

THE frontispiece of this issue of the BULLETIN is another example of the work of our good friend C. F. Conly, of Boston. As usual, it is of the highest rank in photographic art and will well repay careful study in both modeling and posing. Pretty pictures of children are difficult to obtain before the camera, and our Boston friend has certainly achieved great success in this phase of photographic manipulation.

PHOTOGRAPHIC RETOUCHING.

To the Editors of the BULLETIN:

THERE is probably no branch of art so seldom heard or spoken of as photographic retouching; nevertheless, it is as essential as light in making first-class portraits. When negatives are made, the lights and shadows are more or less distorted and defects are magnified, no matter how beautiful the subject or how velvety the skin may be. But when the skillful retoucher takes it in hand, note the change. Cheeks that appeared hollow and sunken because of false shadows or imperfect lighting are beautifully rounded. Moles, freckles, etc., that were multiplied and magnified entirely disappear under his magic touch, making a beautiful portrait of what was formerly only a commonplace photograph.

Like all other professions, there are unskilled workmen ready and willing to attempt to imitate first-class work at prices that retouchers find it impossible to work for. And that is not all! When it is completed to his satisfaction, and would cause a good retoucher to blush, the required number of photos are printed from such a negative and accepted by people at such figures as \$3 per dozen or less, forcing skilled retouchers to work at a price that makes it impossible to do artistic work.

In order to make it difficult to get retouching done at so low a figure, we have organized for protection to ourselves and the elevation of the photographic business in general.

R. W. DREW,

Secretary United Retouchers' Association.

ANTHONY'S Photographic Bulletin.

EDITED BY

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Aided by **ARTHUR H. ELLIOTT, Ph.D., F.C.S.,**
and a corps of practical assistants.

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Advertisements should reach us not later than the Saturday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, six, twelve or twenty-four issues.

E. & H. T. ANTHONY & CO., Publishers.

WORLD'S COLUMBIAN EXPOSITION.

PROGRAMME OF CEREMONIES ATTENDING
THE DEDICATION OF THE BUILDINGS OF
THE WORLD'S COLUMBIAN EXPOSITION,
OCTOBER 20, 21, 22, 1892, CHICAGO,
ILL., U. S. A.

WHEN the Congress of the United States authorized the commemoration of the Four Hundredth anniversary of the discovery of America by an International Exposition to be held in Chicago during the summer of 1893, it also provided that the Exposition buildings should be dedicated on the twelfth day of October, 1892, with "appropriate ceremonies." Subsequently, by act of Congress, this date was changed to October 21, 1892.

Aside from the international interest in this fitting prelude to the magnificent picture of the world's progress that will be presented in 1893, this dedicatory service will furnish an opportunity for the world to behold the extent of the preparations which are being made for the Exposition.

The task of preparing a programme of ceremonies which will appropriately herald the greater spectacle commemorating the discovery, development and progress of the New World, has been a work involving great care and the consideration of many difficulties. The following programme of the dedicatory exercises and incidents connected therewith is submitted as the result of this thought and purpose:

On the evening of Wednesday, October 19th, a grand reception will be tendered the President of the United States, his cabinet, and other distinguished guests at the Auditorium. After the close of the ceremonies on each of the three succeeding evenings, there will be magnificent pyrotechnic displays.

THURSDAY, OCTOBER TWENTIETH.—THE CIVIC CELEBRATION.

The first day will witness an imposing procession, indicative of peace, contentment and prosperity, participated in by civic organizations, which will be reviewed by the President of the United States, his cabinet, the Congress, and other honored guests.

In the evening, at Jackson Park, amid myriads of electric lights and other displays, a water pageant, "The Procession of the Centuries," will move through the beautiful water-ways of the Exposition grounds, illustrating with beauty and historic accuracy some of the great facts of history connected with the discovery of America, such as the condition of this country prior to the landing of Columbus; striking events in the life of the great discoverer; important epochs in American history and the world's progress in civilization. The vessels upon which these tableaux will be represented vary from 40 to 53 feet in length, modeled after the naval architecture of the period represented; for example, "Columbus before the Court of Spain," will be represented upon a vessel modeled after the lines of the "Santa Maria."

The following subjects will be illustrated:

- 1st. Aboriginal Age; representing the American Indians.
- 2d. The Stone Age; representing the Cliff Dwellers.
- 3d. The Age of Metal; representing the Aztecs, their religious rites, manners and customs.
- 4th. Columbus at the Court of Ferdinand and Isabella.
- 5th. Departure of Columbus from Palos.
- 6th. Discovery of America.
- 7th. Columbus before the Court of Ferdi-

nand and Isabella, presenting natives and the strange products of the new country.

8th. English Cavaliers and the settlement of Jamestown.

9th. Hendrik Hudson; discovery of the Hudson river; Dutch settlement of New Amsterdam.

10th. Landing of the Pilgrims, and illustrations of early Puritan life.

11th. Ferdinand de Soto; discovery of the Mississippi.

12th. The French explorers. Pierre Marquette, Chevalier La Salle, and the Northwest.

13th. Washington and his generals.

14th. Signing of the Declaration of Independence.

15th. Union of the colonies; the thirteen original States; the sisterhood of the Great Republic, welcoming the territories to the constellation of the States.

16th. "Westward the course of empire takes its way."

17th. The genius of invention; application of steam, etc.

18th. Electricity and electrical appliances.

19th. War; representing valor, sacrifice, power, death, devastation.

20th. Peace; representing tranquility, security, prosperity, happiness.

21st. Agriculture.

22d. Mining.

23d. Science, Art and Literature.

24th. The Universal Brotherhood of Man; equal rights; law of justice; Liberty Enlightening the World.

FRIDAY, OCTOBER TWENTY-FIRST.—DEDICATION DAY.

The national salute at sunrise will inaugurate the ceremonies of Dedication Day. The President of the United States, his Cabinet, members of the Supreme Court, members of the Senate and House of Representatives, distinguished foreign guests and governors of the different States and Territories with their official staffs, will be escorted by a guard of honor composed of troops of the United States Army, detachments of the United States naval forces, and regiments from the various State National Guards, to the Manufactures and Liberal Arts Building, in which the dedicatory exercises will be held.

At 1 o'clock in the afternoon in this building the following dedicatory programme will be carried out under the direction of the Director-General.

1st. Columbian March. Written for the occasion by Prof. John K. Paine.

2d. Prayer by Bishop Charles H. Fowler, D.D., LL.D., of California.

3d. Dedicatory Ode. Words by Miss Harriet Monroe, of Chicago; music by G. W. Chadwick, of Boston.

4th. Presentation of the master artists of the Exposition and their completed work, by the Chief of Construction.

5th. Report of the Director-General to the World's Columbian Commission.

6th. Presentation of the buildings for dedication by the President of the World's Columbian Exposition to the President of the World's Columbian Commission.

7th. Chorus, "The Heavens are Telling"—Haydn.

8th. Presentation of the buildings for dedication by the President of the World's Columbian Commission to the President of the United States.

9th. Chorus, "In Praise of God"—Beethoven.

10th. Dedication of the buildings by the President of the United States.

11th. Hallelujah Chorus from "The Messiah"—Handel.

12th. Dedicatory oration, Hon. Wm. C. P. Breckinridge, Kentucky.

13th. "The Star-Spangled Banner" and "Hail Columbia," with full chorus and orchestral accompaniment.

14th. Columbian oration, Chauncey M. Depew, New York.

15th. National salute.

At the close of this programme a special electric and pyrotechnic display will be given, with a repetition of "The Procession of the Centuries."

SATURDAY, OCTOBER TWENTY-SECOND.—THE MILITARY CELEBRATION.

A series of military manoeuvres and parades will constitute the main portion of the day's programme. In the evening attractive and appropriate celebrations will be provided, followed by a magnificent display of fireworks.

A number of brilliant social entertainments will be given by the citizens of Chicago during the three evenings of the dedication celebration.

PHOTOGRAPHIC ASSOCIATION OF CANADA.

The first meeting of the annual convention of the Photographic Association of Canada was held on September 8th, in Victoria Hall, Queen street, east, Toronto. Over \$495 in gold,

besides trophies, etc., were offered for competition, each exhibitor being allowed to take only one ordinary prize. The discussions during the convention were made as practical as possible, and a darkroom was placed at the disposal of the Society by Mr. J. C. Walker, so that demonstrations of all kinds could be made.

Among the donors of prizes may be mentioned the Stanley Dry Plate Company, Montreal; Mr. C. E. Hopkins, Anderson, Robinson & Co., Mulholland & Sharpe, *Canadian Photographic Journal*, and Messrs. Gibson & Ingwell. Among the exhibitors were: Cramer Plate Company, St. Louis, Missouri; Stanley Dry Plate Company, Montreal, who show collections of photographs made from their plates; J. C. Walker, 147 Yonge street, Toronto; C. S. Cochrane, Hamilton; E. Poole, St. Catharines; Edy Bros., London; Murray & Son, Brockville; Kellie Bros., Montreal; W. J. Townsend, Hamilton; Park Bros., Yonge street, Toronto; W. Still, Orangeville; J. T. Blaikie, Chatham; William Craig, Owen Sound; August Barrett, Cannington; Frederick Lyonde, Hamilton; —. Thom, Winnipeg; J. A. Lord, Uxbridge; S. Hays, Welland; R. Elliott, St. Thomas; W. F. Nailer, Brampton; Mrs. Crawford, Hamilton, and some others.

The badge adopted by the society was of the shape and size of a three-leaved clover, and the leaves were colored respectively red, white and blue. The badge was held in place by a pin with a gilt letter "P" lying in the center of the flower.

The second session was also held in Victoria Hall on the following day during both forenoon and afternoon. The afternoon was occupied in the discussion of a number of topics of interest to the profession. Like nearly every other class of business men in this and other countries, the Canadian photographers have been confronted with a number of difficulties relating to their work, and it is only in recent years that anything like an organized effort has been exerted to solve them. It was considered advisable to place the association on a footing somewhat similar to that of the druggists' and dentists', and a committee was appointed to meet and confer as to the best means of securing incorporation. It is probable that some effort will be made to obtain legislative authority to establish a standard to which all in the business must attain, and by an enforcement of a system of apprenticeship and examinations to diminish the number of inferior men now so fre-

quently met with throughout the Dominion. In the evening the hall was thronged with a large number of ladies and gentlemen, who came to see the really admirable specimens of photographic art which adorned the walls. The exhibits afforded an interesting proof of the rapid progress in nearly all branches of photography which has been made within comparatively few years. Probably the most conspicuous collection in the entire number was that from the studio of Endean, of Cleveland, Ohio, a superb group of portraits made from Cramer's isochromatic plates. The old difficulty of obtaining a correct rendering of the relative values of different colors has been completely overcome by the use of these plates, and results may now be obtained which formerly were practically beyond the range of possibility in photography. The perfect work thus secured was admired by every visitor to the hall, and members of the association had an opportunity of bearing away some idea of what could be accomplished by a judicious treatment of proper material.

At the following session of the society held on the 10th of September, the question box was opened and a number of very interesting questions were raised and discussed.

The committee which had been appointed to devise ways and means to put down crayon and ticket frauds, advised that a committee of one be appointed to confer with a lawyer to see what could be done, and if the statutes did not cover the case, to apply to the Government for legislation on the subject.

The following set of rules to govern studios of members was drawn up by the committee appointed for that purpose: "A deposit on all orders will be required at the time of sitting. An extra charge will be made on all resittings when a change of toilet is made. An extra charge will be made when photographs are ordered from more than one negative. Customers making appointments in advance will be given the preference." It was decided to have these rules printed and all the members supplied with them.

At noon the meeting adjourned, and the members were photographed in a group by Mr. J. C. Walker in front of the Metropolitan church. In the afternoon they met again at 2 o'clock and finished the business of the convention. In future, 25 per cent. of all money prizes donated to the association will be put into the general funds and the remainder be given for competition. It was decided that

winners of first prizes would be debarred from competing in the same class the following year. The report of the judges was read by the secretary, and below are the decisions:

THE STANLEY DRY PLATE COMPANY'S PRIZES.

For best exhibit of photos made on Stanley plate from cities of 10,000 population and over—First prize, a cup, value \$50, won by C. S. Cochrane, Hamilton; second prize, a magazine camera, value \$39, won by Kelly & Co., Montreal.

From cities under 10,000 population—First prize, cash \$25, Murray & Son, Rockville; second prize, cash, T. Baikie, Chatham.

Retouching cabinets, busts and full figure—Prize \$15, won by Thomas Leatherdale.

Printing 12 cabinets, different sizes—Prize \$12, won by Miss Curtis.

C. E. HOPKINS' PRIZES.

Best collection of photos on Omega paper, any sized plates—First, \$35, Murray & Son, Brockville; second, \$25, W. Still, Orangeville; third, \$15, T. Baikie, Chatham.

Best collection of photos on Omega paper, size 8x10 or larger—First, \$15, W. Still, Orangeville; second, \$10, August Barrett, Cannington.

EAGLE AND STAR PLATE PRIZES.

For best exhibit made from Eagle and Star plates—Prize, Columbus parlor lamp, value \$100, won by Edy Bros., London.

For best exhibit from Eagle and Star plates from places under 10,000 population—First prize, \$25, won by J. C. Walker, Toronto; second prize, \$10, won by Park Bros., Toronto.

There would seem to be some mistake about this award, as all the winners are from places above 10,000 population.

MULHOLLAND & SHARP PRIZES.

For the best illustration of Tennyson's poem "Dora," three photos, 8x10 or larger—Mr. Lyonde, of Hamilton, was the only exhibitor in this class, but his three pictures were indeed works of art.

GIBSON & TUGWELL PRIZES.

For excellence of prints in any process other than albumen or gelatino-chloride—First, \$20, J. C. Walker, Toronto; second, one year's subscription to *The Canada Photo Journal*, Mr. Townsend, Hamilton.

The \$25 prize for the best enlargement was won by J. C. Walker, Toronto.

CLOSE OF THE CONVENTION.

Before the business meeting closed, Mr. Knowlton informed the members that the Stanley Dry Plate Company, Montreal, which he represented, would raise their donation from \$100 to \$250 for next year. Mr. Anderson, for the Eagle and Star Plate Company, caused some amusement by saying that he would go Mr. Knowlton ten cents better.

The session was brought to a close by the usual votes of thanks all around. They will meet in Toronto again next year in preference to either Ottawa or Chicago.

Bibliography.

PHOTOGRAPHY ANNUAL FOR 1892. By Henry Sturmev-Iliffe & Son, London, England.

Pressure upon our time and our columns has kept us from noticing this bulky annual before. It is to our mind better in many of its features than the previous issue, but we still feel constrained to repeat our last year's adverse criticism on the introduction of a mass of extraneous advertising matter among its articles, which to our mind is not only out of place, but the information which it is intended to convey could be far better obtained by the reader in consulting the various price lists of different dealers. Several new features have been added to the work, notably a list of photographic trade-marks which fills over forty pages of the book. The book is an 8vo of about 900 pages and is ably edited and well gotten up in every respect. The lists of societies are especially complete, and the articles both timely and well written. We heartily commend it to our readers, even with the price lists sandwiched in between. And we hope the editor will take our opinion in a different spirit from what he did last year.

VISAGE ET FIXAGE. Par P. Mercier, Paris: Gauthier-Villars et Fils, 1892.

This 12mo of 130 pages can not fail to interest both our amateur and professional readers. In it, the chemist will find the action of various substances in the toning bath studied from a novel point of view, and an especially good table of the various salts used in toning and fixing, with their more important properties, enabling a judicious choice of the various formulas to be made to suit a particular case.

PHOTOGRAPHY UP TO DATE. By W. Ingles Rogers, Plymouth, 1892.

This small handbook embodies a collection of the more recent hints, dodges and processes connected with the photographic art. Many of the so called wrinkles contained within its 130 pages will be found invaluable by all of our readers, and the information that it contains we can none of us afford to be without.

FOTOGRAFISK TIDSKRIFTS ARSBOK. By Albin Roosval, Stockholm, 1892.

This Swedish annual is neatly gotten up and contains many illustrations of a very fine character, particularly those of forest and winter scenery. The articles we confess are somewhat beyond our depth in their present shape, but the illustrations we can and do most heartily appreciate.

LA PRATIQUE DES PROJECTIONS. Par H. Fourtier. Paris: Gauthier-Villars et Fils, 1892.

A complete little work of 150 pages, on the theory and handling of the lantern, in which the history, the theory and optics of the lantern, and the various sources of light suitable, are concisely discussed. A work which will be found valuable to every lantern worker.

TRAITÉ DE PHOTOGRAPHIE STÉRÉOSCOPIQUE. Par A. L. Donnadieu. Paris: Gauthier-Villars et Fils, 1892.

This work does not pretend to be a long and strictly scientific exposition of the theories of stereoscopic photography. The author has confined himself to those that are absolutely necessary in discussing the subject. The practical part is the standpoint from which the book takes stereoscopy, and it furnishes all the information necessary for the production of a perfect stereoscopic negative.

It is not too much to say that stereoscopy is the true photography, and that at the present time far too little attention is paid to it. The work is accompanied by an atlas of 20 plates illustrating the beautiful results obtainable by the process. The work is a 12mo of 250 pages, and is most timely and interesting.

TRAITÉ ENCYCLOPÉDIQUE DE PHOTOGRAPHIE. Par Charles Fabre. Paris: Gauthier-Villars et Fils, 1892. Premier Supplément. Premier et Deuxième fascicules.

This first supplement to this really able and comprehensive work has just come to our hands. A supplement of this kind is an abso-

lute necessity, as well as being the best way of bringing the work up to date, as new improvements and developments are brought forth.

In addition to other matter, it treats of the tele-objective of Dallmeyer, and contains an article on the choice of objectives, together with a long discussion on the Zeiss Anastigmat lenses. All of our readers who are fortunate enough to possess the preceding numbers will want these two.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. Correspondents will please remember this. No attention will be paid to anonymous communications.

Q.—J. R. W. writes: Will you please inform me through your paper, the BULLETIN, if in toning aristo paper it is necessary to use citrate of sodium?

A.—Our experience has been to the contrary. We find that aristo paper works well with almost any good toning bath, and the quantity of gold can be considerably reduced below what is necessary for use with albumen paper.

Q.—H. J. T. writes: In one of your BULLETINS you replied to a question asking the best formula for making up an article to blacken the inside of lenses. I have looked through several of your issues, but cannot find it. Will you kindly give me the information at once?

A.—This may be accomplished by painting with a ten per cent. solution of sulphuret of potash, which is washed off after the desired degree of blackness is obtained, or by treating the lens tube with a solution containing equal parts of nitrate of silver and nitrate of copper. The solution may be applied with a brush, and the brass tube should then be heated gradually and evenly until it assumes the desired color.

Q.—R. S. P. writes: I find my printing gives me a great deal of trouble lately. My prints are all muddy and dirty no matter how much care I take in handling them. My printing bath does not look clean. How can I remedy this?

A.—The fault, undoubtedly, lies in your bath, if it looks dirty; you should either dis-

card or clarify it. To do the latter, add a small amount of permanganate of potash and expose the bath to the sun for a day or two, after which it should be filtered into a clean bottle. Another way is to shake it up with kaolin or to add a small quantity of alum to it; then sun it and filter.

Q.—H. P. N. writes: Can you tell me of some method for developing bromide paper that will enable me to get rid of using the iron and oxalate developer? I have great difficulty in keeping the former solution in good condition.

A.—We would advise you to try some of the more recent developers. Personally we have used a mixture of para-amidophenol hydrochlorate and hydroquinone with great success. In some cases a yellow tint is imparted to the paper after fixing, but it can readily be removed by immersing it for a few minutes in a weak solution of acid sulphite of soda. The following formula is one that we also frequently use, and obtain equally good results with it as when using the first-mentioned one.

NO. 1.

| | |
|--------------------------------|-------------|
| Distilled water..... | 20 ounces. |
| Sulphite of soda crystals..... | 4 “ |
| Eikonogen..... | 330 grains. |
| Hydroquinone..... | 160 “ |
| Water to make up to.. | 32 ounces. |

NO. 2.

| | |
|---------------------------------|------------|
| Distilled water..... | 20 ounces. |
| Carbonate of potash... .. | 2 “ |
| Carbonate of soda crystals..... | 2 “ |
| Water to make up to.. | 32 “ |

Use 1 ounce of No. 1 to $\frac{3}{4}$ ounce of No. 2, and be careful to wash thoroughly before immersing in hypo.

Views Caught with the Drop Shutter.

WE note the removal of ALLEN BROTHERS, the well-known Detroit dealers in photographic materials, to a handsome five-story and basement stone-front building, at 247 Jefferson avenue. May success attend their venture.

A NEW departure which attracts much public attention is the so-called tinted-glass pro-

cess of Messrs. SEELEY & WARNOCK, of 320 Main street, Bridgeport, Conn. These gentlemen have for the past twenty years done business at this place, and have created for themselves an enviable reputation. Among other features of their establishment is a burinisher operated by electricity.

WE have received notice of the establishment at 126 West 23d street of WILLIAM WEISS, who is prepared to do photographic printing of all kinds for the trade generally, as well as for amateurs.

THE attention of the country has been recently called to the breaking of the world's trotting records, by means of a sulky provided with bicycle wheels. We understand that the wheels used in these cases with the pneumatic tires and ball bearings were made by the POPE MANUFACTURING COMPANY of Boston.

THE firm of F. JAY HAYNES & BROTHER, photographers and publishers, 392 Jackson street, St. Paul, Minn., have dissolved by mutual consent, Mr. F. Jay Haynes continuing the business of the firm. Mr. Fred. E. Haynes will continue in the photographic business at the Jacoby studio, recently purchased by him, corner Nicollet avenue and 3d street.

RALPH D. CLEVELAND has opened a printing and developing establishment at 204 Washington avenue, South Minneapolis, Minn., where he makes a specialty of amateur work of all kinds. The claims of the amateur in this direction are becoming daily more recognized, and a careful and prompt attention to orders will always be productive of a good business.

WE have recently received a descriptive list of sets of lantern slides, from G. W. WILSON & Co., 2 St. Swithin street, Aberdeen, Scotland, which includes some very interesting series of studies in little-visited foreign countries; also a list of photographic studies by Frank M. Sutcliffe, which are especially worthy of notice.

THE new firm of BUTTS & ADAMS, 457 and 459 Washington street, Buffalo, N. Y., are so far settled in their new quarters as to be able to fill with promptitude the many orders for photographic supplies which they are constantly receiving.

MR. BELLSMITH, of Cincinnati, Ohio, has been seriously annoyed by a swindler who represents himself as being that gentleman's son, and, on the strength of such representation, has induced a large number of people to give orders for crayon enlargements from a fictitious company, of course pocketing the deposit. The matter has been placed in the hands of the police, and his numerous victims are anxiously awaiting his arrest.

AN alleged pickpocket recently arrested in Hartford, Conn., made it so difficult for a photographer to take his picture, that the officers hit upon the happy expedient of having a snap shot taken unknown to him, while walking through the street. The amateur who performed the operation succeeded in getting an excellent picture of the prisoner and of the officer who was with him. Need-

less to say, this happy result was not placed on exhibition in the rogues' gallery.

E. E. MOORE, who was formerly with the Acme Burnisher Company, and later with the Blair Camera Company, has returned to his old place, with the Stanley Dry Plate Company, where his many Syracuse friends and acquaintances will welcome him once more.

A REGULAR school of retouching and photograph finishing in all styles has been established in Brooklyn. Reference to our advertising pages will furnish the necessary details. We believe this is the only school of the kind now in existence here since the closing of that at the Cooper Institute. Those who desire this kind of instruction should look into the matter.

TABLE OF CONTENTS.

| | PAGE | | PAGE |
|--|------|--|------|
| BIBLIOGRAPHY | 605 | PHOTOGRAVURE (<i>Continued</i>), by A. | |
| COPYING OLD PORTRAITS, by <i>Ellerslie</i> | | <i>Dawson</i> | 593 |
| <i>Wallace</i> | 585 | PHOTO-ZINCOGRAPHY..... | 591 |
| EDITORIAL NOTES | 579 | RETOUCHING BY ELECTRICITY..... | 599 |
| HARVARD'S NEW TELESCOPE AND | | SWING-BACK..... | 600 |
| STELLAR PHOTOGRAPHY..... | 577 | THE WORLD'S PHOTOGRAPHERS IN | |
| LETTER FROM GERMANY, by <i>Dr. H. W.</i> | | CHICAGO | 597 |
| <i>Vogel</i> | 581 | VIEWS CAUGHT WITH THE DROP SHUT- | |
| OBITUARY—DONALD RAMSEY..... | 600 | TER..... | 607 |
| OUR ILLUSTRATION..... | 601 | WATKINS' EXPOSURE METER..... | 599 |
| PHOTOGRAPHIC ASSOCIATION OF CANADA | 603 | WHAT OUR FRIENDS WOULD LIKE TO | |
| PHOTOGRAPHIC RETOUCHING..... | 601 | KNOW..... | 606 |
| PHOTOGRAPHY AND METEOROLOGY.... | 588 | WORLD'S COLUMBIAN EXPOSITION..... | 602 |





MRS. OTTIE PINTON'S PETS, BOSTON.

A NATURAL POSE.

NO. 1000. 1000. 1000. 1000.

ANTHONY'S

Photographic Bulletin.

EDITORS :

PROF. CHARLES F. CHANDLER, PH.D., LL.D.

PROF. ARTHUR H. ELLIOTT, PH.D., F.C.S.

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THE NEW YORK CAMERA CLUB'S COLUMBIAN EXCURSION.

THE field day planned by the members of the New York Camera Club for Tuesday, October 11th, was in every way a decided success. A committee, consisting of Messrs. Thomas Manning, William J. Cassard and David Williams, had been appointed to make the necessary arrangements, and, as a result, the new steamer *General* was chartered for the occasion.

Although designed to accommodate fifteen hundred persons, but three hundred tickets were issued in order to insure perfect facilities for the use of a camera. The entire issue of tickets was promptly taken up, and by eleven o'clock on the appointed morning all the invited guests had boarded the steamer where she lay, fast to the pier, at the foot of West 22d street.

From here they proceeded down the river, past the docks of the Atlantic steamers, most of which were elaborately decorated with flags, and between two shores literally black with human beings, to a point about half a mile below the Statue of Liberty, where she laid to, awaiting the approach of the White Squadron through the Narrows. On starting, the air was somewhat cool, but under the influence of the sun, the photographer's *sine qua non* on such an occasion as this, wraps were soon laid aside. Had it not been for a certain amount of mistiness the day would have been a perfect one for the purpose of taking pictures; as it was, many good negatives were obtained of the endless variety of craft that filled the waters of the lower bay.

The harbor never presented such activity. Every conceivable type of river craft was darting hither and thither, making preparations for the great event. Every boat, from the little rowboat to the big Sound steamer, was bedecked with bunting from stem to stern. During the interval of time that elapsed before the appearance of the fleet, lunch was served by Mazzetti on board the

General, and shortly after one o'clock the fleet torpedo boat *Cushing*, under the command of Director S. Nicholson Kane, appeared coming up the bay.

Next came three yachts, acting as vidette boats, the *Aida*, the *Allegra*, and the *Helvetia*. At the right of the man-of-war squadron came the majestic *Philadelphia* flying the Commodore's pennant, her white sides glistening in the sun, and strings of color rising from her sharp prow, that cleft the water like a knife, in a glorious rainbow, to meet the hull again at the other end of a huge arch of flying bunting. On the left was the low, massive *Miantonomoh*, her turrets bristling and warlike in appearance, even her gay streamers of bunting being unable to remove that businesslike ensemble so characteristic of the monitor type of modern marine war engine.

Following, came the flagship of the French North Atlantic Squadron, *L'Arethuse*, the dispatch boat *Dolphin*, the armored cruiser *Atlanta*, the French cruiser *Le Hussard*, the dynamite cruiser *Vesuvius*, the coast survey steamship *Blake*, the Italian cruiser *Bausan*, the lighthouse steamer *America*, the revenue cutter *Grant*, and the Spanish cruiser *Infanta Isabel*, with the revenue cutter *Dexter* bringing up the rear of the naval division. Thus there was a column of four foreign warships with an escort of two American ones to each.

Following this were ten divisions of miscellaneous craft; but, as might be expected, interest centered on the naval portion of the parade.

The order of sailing was beautiful in design and was well carried out. Alas for the limitations of the camera, which forbid the reproduction of an extended scene on a scale that would convey even a slight idea of its beauty!

As the Naval Militia boats arrived off the old abandoned stone fort Lafayette, the first gun of salute echoed from the walls of Fort Hamilton. Another came in quick succession, followed by the sound of an answering one from Fort Tompkins, on Staten Island.

Next, the *Philadelphia* was heard from, followed by the *Dolphin*, and as quick as thought every warship joined in the firing. The thrilling effect of a fleet forcing its way into the harbor between the forts was presented. During all this time it is needless to say that cameras had been in constant use. Every known make seemed to be represented, some elaborate in every detail, shining with polished brass and aluminium, and many of the more modest variety. The ladies, of whom there were many, had been almost as enthusiastic as the gentlemen, and, when not employed in making exposures, were waving the pocket flags provided as souvenirs of the occasion. On its way up the river the *General* joined Division No. 4. Beginning at the Battery, every available pier and building commanding a view of the river was crowded. Riverside Drive was thronged with carriages of every description, and not even standing room was to be found on the shore.

As the Naval Militia passed the tomb of General Grant, a salute of steam whistles was given. Very deliberately and with perfect decorum the boats floated in line to await the approach of those behind. Then they marched, so to speak, right forward, in single file, and swept around in a graceful curve and headed down the river in perfect rank on the Jersey side.

Very slowly the *Philadelphia*, *L'Arethuse* and the *Miantonomoh* emerged from the escorting fleet, and advanced toward the Militia. The spectators gathered on the sides of the great sidewheel excursion steamboats until guard rails sank more than a foot under water, and the edges of the decks were awash.

As the bells on the ship struck the hour of three, a line of signals fluttered to the masthead on the *Philadelphia*. A red and white answering signal appeared on every other ship, and the *Philadelphia's* anchor splashed in the water under her starboard bow. It was followed by the anchors of the other warships, and a minute later they were all swinging around broadside to the flood tide.

Shortly after anchoring, a salute was fired in which all the non-combatants, so to speak, joined with their steam whistles. After this, the merchant marine made the circuit of the anchored men-of-war—and now, if never before, were the cameras brought into play. The management had provided darkrooms for changing plates on board of the steamer, and for those of the members who were not equipped with films they were in frequent demand.

A number of features of the day attracted much attention. The first was the firing of the *Vesuvius's* guns off Fort Hamilton. This was done with her great air-tubes, designed to throw hundreds of pounds of dynamite more than a mile through the air. The spectators saw a faint cloud of white smoke come from the tubes at each discharge, and then came a rattling report, a sound that shivered in the air. This was caused by the vibration of the thin walls of the tubes, and the cloud of smoke was simply frozen moisture from the charge of compressed air.

But outside of the Naval Militia and the warships, the feature of the demonstration that attracted probably the most attention was the display made by the fire-boats, the *New Yorker*, the *Zophar Mills* and the *Havemeyer*. Led by the *New Yorker*, the three steamed up in the procession.

Half way up the river the *New Yorker* started her powerful pumps. Instantly a column of water spouted from the muzzle hundreds of feet into the air. The other boats with smaller pumps followed. Never before was a naval parade made attractive by a display of traveling fountains like these.

On the way down the river to her pier, all the party on board expressed their entire satisfaction with their day's outing, and at four o'clock, when 22d street was reached, they dispersed, a merry, tired and satisfied throng, to their various homes and darkrooms.

The arrangements for the day's outing were carefully made and perfectly carried out, and to the efficient work of the committee the enjoyment of the party was largely due.

The subscriptions were sufficiently large to enable the party to charter the steamer for the evening display of fireworks, which was accordingly done.

EDITORIAL NOTES.

THE Hoboken (N. J.) Camera Club enjoyed its sixth semi-annual outing, on the Delaware and Hudson Canal and Rockaway River, during the last week in September, the historic old town of Boonton being their objective point. A large number of plates were exposed, and the trip was most enjoyable in all ways.

THE Schuylkill Camera Club, of Pottsville, Pa., has resumed its meetings after a summer of hard work among its members. Its annual field day has been set for the 22d of this month. Application has been made for membership to the American Lantern Slide Interchange, which, if granted, will result in a series of ten slide exhibitions during the season.

A CHARMING little manual has been published by the Messrs. Dallmeyer, which treats of their new tele-photographic lens, and which is illustrated with collotypes of various comparative views made with these lenses and those of the ordinary construction; these results are most interesting and instructive.

THE Albany Camera Club has decided to give a public competitive print exhibition at an early date, and will award first and second prizes in each of three classes of work. The American Lantern Slide Interchange has honored this Club with a request for one hundred of its best slides and the members are busy preparing them.

A VERY successful and highly interesting exhibition of Colorado scenery was given by the Chicago Lantern Slide Club on the 22d of September. This was the first of the season and will be followed regularly by others through the fall and winter.

REFERRING to an article in the last number of the BULLETIN on the "Lantern Craze in Photographic Societies," the New York *Recorder* of October 3d agrees with the sentiment there expressed and goes on to say: "Too much time and effort are devoted to what should be only a co-ordinate branch of the photographer's art. There are other and equally satisfactory uses to which a picture can be put, aside from making it into a lantern slide. A fine print exhibition will do more for the credit and actual reputation of an amateur club among people whose opinions are worth having, than the best collection of slides that ever went out through an interchange."

AN English journal, speaking of the hold which the art of photography has acquired in all branches of industry and amusement, cites the case of one of the leading London theatres which, in order to properly mount a new play, sent to Portugal and had a large number of photographs made of the scenery to be reproduced in the stage setting, in order to ensure a realistic effect. So much for the camera.

THE twenty-eighth illustrated lecture of the California Camera Club was given on September 29th by J. M. Hutchings, whose subject was "Tropical America." The views were of great interest and the entire evening was most enjoyably spent by those who were present.

THE efforts of amateur photographers have received a worthy recognition at the hands of the Art Director of the Massachusetts Charitable Association, who has invited a large number of those well known for their good work to be represented at the coming annual fair of this organization, which is one of the most prominent and time-honored institutions in the Eastern States. Gold, silver and bronze medals will be awarded; and as this is made possible through the invitation of the Association and is the first time that the courtesy has ever been extended, those whose prints are honored by a position on the walls should feel justly proud.

MR. WILLIAM B. LLOYD, of Hartford, Conn., will exhibit at the World's Fair a beautiful and colossal composite picture of the Catholic clergy of the State. It is said to be a masterly piece of work in conception and detail.

ASTRONOMY in the able hands of Professor Barnard, of Lick Observatory, has accomplished another feat, in the discovery of a fifth satellite of the planet Jupiter. It has been believed for the past 3,000 years that only four satellites revolved around this planet, but now that a fifth has been found, it seems strange to everybody that photography should not have demonstrated its existence before the present time.

A STATE league of Amateur Photographers is being formed in New Jersey, similar to those existing in New York, Connecticut, California and Vermont.

WE are in receipt, from Professor George E. Hale, of the Kenwood Astrophysical Observatory, Chicago, of reprints of his very valuable and careful reports on "Photographs of Solar Phenomena," "A Remarkable Solar Disturbance," and "The Ultra Violet Spectrum of the Solar Prominences." These reports form an important addition to the literature on these subjects. We tender our hearty thanks for the receipt of them.

THE New Orleans Camera Club gave its twenty-eighth complimentary exhibition on the evening of the 7th October, which opened the season of active work of the club. The regular meetings will occur hereafter throughout the season.

WE have before us two views recently made with a 2 B., O. N. A. equipment supplied by our publishers to an amateur, Mr. H. O. Hall, of Washington, D. C., which are of exceptionally good quality, both as regards the composition and technical work of the operator and also the work of the instrument which was employed. The detail and atmospheric effect are unusually good, even for a high-class lens. These prints serve to show conclusively how an inexpensive outfit may be made to produce surprisingly fine results when properly handled.

OWING to an unusual amount of bad weather, the California Camera Club was obliged to postpone its print exhibition, which was announced for September 3d, to the 29th of the month. Up to the time of going to press we have not received its award of prizes, but shall probably do so before next issue.

AN English manufacturer of dry plates has been for a year past employing a novel method of packing plates without anything between the film surfaces. His manner of working consists in cutting through the glass only, of two plates and folding them together, film sides in, and with the film itself acting as a hinge at the cut edge of the glass. It is claimed that this method has many advantages over the ordinary ways in use elsewhere.

MR. E. J. WALL, of England, in a recent address strongly urges the omission of sulphite of soda in hydroquinone development, and the substitution thereof of ammonia or carbonate of potash with table salt in place of bromide, where it is necessary to retard development. In his opinion sulphite of soda is used greatly to excess in all formulas. He also said that "if negatives free from stain were required, they could be had by the use of the acid fixing bath."

An ingenious and very effective method of ascertaining the field of force of a bar magnet has lately been employed simultaneously by two prominent electricians with the aid of the dry plate. A slow plate is placed, film side uppermost, on a strong bar magnet which has previously been carefully centered on a card marked with parallel lines and concentric circles. A quantity of iron filings were then evenly sprinkled from a flannel bag over the surface of the plate and the plate gently tapped until the filings had found their resting places on the lines of force—all this, of course, having been done in non-actinic light. An exposure was then made by an electric light carefully suspended so that the shadows cast by the filings should be uniform, the filings were then shaken and carefully dusted off and the plate developed. The prints thus obtained are said to present very beautiful and instructive results.

We take pleasure in correcting what may have caused a misconception in a statement contained in a recent number of the BULLETIN regarding the discontinuance of the Minneapolis Camera Club and its having been merged into the Hiawatha Camera Club. The statement was both right and wrong, inasmuch as the original Minneapolis Camera Club was disbanded some time ago. There is, however, to-day in existence a flourishing and active club called the Minneapolis Camera Club, which was incorporated June 4, 1892. This club has not and is not likely to consolidate with any other society, and in justice to it we make this explanation.

[From Our Special Correspondent.]

ENGLISH NOTES.

I HAVE just returned from a long month's holiday in North Wales, in a district where the daily papers reach not, and where the Saxon wanderer over the hills receives the frequent reply of "Dim Sæsneg" (which being interpreted is, "I know no English") when he attempts to enquire his way of the solitary shepherd or of the old crone who sits smoking a short clay pipe in a roadside hut. For many years I have regularly spent the month of August in this lovely "principality," so close and easy of access, so rich in mountains, rivers and seascapes.

I am always surprised to meet so few Americans in Wales; compared with the flood of tourists which streams from Liverpool through Stratford-on-Avon to London and Paris, Wales can only show tiny dribblets. It is a puzzle to me to know where the pleasure is to be found in "scampering over Europe"; no wonder the kodakist is often unable to identify each particular picture in the "crop" returned to him by the man who "does the rest." My advice to the photo-tourist who has a month to spend on this side of the Atlantic is—"Put it in in North Wales." One week each at Conway, Carnarvon, Portmadoc and Aberdovey ought to enable you to secure a good store of *pictures*. Bring a whole plate or a 10 x 8 camera (plenty of "natives" will be glad to carry it for you for a trifle), and you will get prints which will look well at exhibitions and on your walls; people are getting tired of the "postage-stamp size photos."

Of new developers there is no end; but the last of all—Amidol—is certainly a very remarkable one. Chemically, it is a diamido-phenol, its formula being $C_6H_3OH(NH_2)_2$. It is sent out by Julius Hauff, of Feuerbach, Stuttgart, in the form of small greyish-white silvery crystals. To make the stock solution 100 parts of sodium sulphite crystals are dissolved in 500 parts of water, and then

10 parts of amidol are added. For use, each ounce of this solution is diluted with from 4 to 10 ounces of water; to keep the shadows clear, about three drops of a 10 per cent. solution of potassium bromide should be added to each ounce of developer. No alkali need be added; but, in the form described, amidol has proved in my hands as energetic a developer as any I have ever tried. The solution can be used again and again; and it is a "universal" developer, working equally well with plates and with bromide paper. The price is at present about double that of pyro; but as the solution remains colorless, and can be used to develop many plates in succession, it is probable that amidol is in reality an extremely cheap developer. It gives any amount of *détail*, and good density; but I must confess that the negatives I have developed by it are somewhat lacking in brilliancy and "sparkle" as compared with others exposed under similar conditions, and developed with pyro-ammonia.

Of the many remarkable patents which have been "sealed" or completed by the British Patent Office during the term of its existence, I think the palm must be awarded to the "Central Diaphragm," just patented by Mr. A. J. Stuart. This is the well-known device of equalizing the illumination of the plate and (partly) correcting spherical aberration by obscuring the center of the lens to a greater or less extent, as by an opaque stop, or by pasting a bit of black paper upon the center of the lens. The method has been in use for at least thirty years.

The *Amateur Photographer's Annual*, recently issued by Messrs. Hazell, Watson & Viney, is a handsome and useful volume. It is well illustrated, and contains a capital guide to the principal places of photographic interest in the British Isles.

Mr. A. Watkins (whose "exposure meter" is so largely used) has lately issued a new statement—made from "actual test in the camera"—of the comparative speed of all the plates in the market. His results, however, differ, in many cases, from those obtained in my own practice. One cause of this is very probably the fact that while some manufacturers print only one label for plates of each class, they hardly ever turn out two successive batches of emulsion of precisely equal sensitiveness. The making of a gelatine emulsion is one of the most delicate operations in chemistry; that is, if the maker be required to state beforehand exactly what he intends the result shall be. The tendency is continually to endeavor to make plates more and more rapid; and this is all right, so long as the other good qualities which a gelatine plate should possess go along with it. But it is the "advance all along the line" which is difficult; to obtain great rapidity, other points are frequently sacrificed. Those who prefer the most rapid plates made ought to use great care in protecting them from light of every description, up to and during development. The ease with which a plate develops depends in no small degree upon its having never been affected by light except such as came through the lens.

One of our largest plate-making firms (the Ilford Company) has of late adopted a soda developer as the best in their experience for all their plates, including isochromatics. As I have tried this developer with good results, I give it here for the benefit of the readers of the BULLETIN:

STOCK SOLUTION.

| | |
|----------------------|-----------|
| Pyrogallic acid..... | 1 ounce. |
| Water..... | 6 ounces. |

When dissolved, add 20 drops nitric acid. This will keep for a considerable time. [Of course, where large quantities of developer are used, it will be easier to make the pyro solution up to 60 ounces at once, and dispense with the stock solution.]

No. 1.

| | |
|---------------------|-----------|
| Stock solution..... | 2 ounces. |
| Water..... | 18 “ |

No. 2.

| | |
|--|----------------|
| Carbonate of soda (crystals) (not bi-carbonate)..... | 2 ounces (av.) |
| Sulphite of soda..... | 2 “ |
| Bromide of potassium..... | 20 grains. |
| Water..... | 20 ounces. |

For use, take equal quantities Nos. 1 and 2.

Pour the developer carefully over the plate, avoiding air bubbles; rock the dish, carefully keeping the plate well covered with solution; allow the plate to remain after all detail is out, to obtain proper density. Judge of this by looking through the plate.

In cases of over-exposure, reduce the quantity of No. 2 solution.

In cases of under-exposure, dilute the mixed developer with its bulk of water, cover the dish, keep it rocking, and wait until all possible detail is out.

ALUM BATH.—After developing, wash the plate well under the tap, and immerse for a few minutes in alum, 3 ounces; water, 20 ounces.

FIXING.—Wash well again, and fix as usual. Hypo, 1 pound (av.); water, 40 ounces. Allow to remain in this bath for several minutes after fixation is apparently complete.

Never omit alum bath, and do not add anything either to it or fixing bath.

The annual exhibition of the Photographic Society of Great Britain will be opened (September 24) before these notes appear in print. Owing to certain dissensions connected with the exhibition of 1891, the present show will be deprived of the work of some of our best men, including Messrs. H. P. Robinson, C. Davison, etc.,—men who represent more especially the “art” side of photography. It is probable that the spring of 1893 will see the opening of a new exhibition, at which the seceders will be well represented. I think that there is plenty of room for another photographic exhibition of the first class in London, and the rivalry is certain to do good in spurring each man on to fresh efforts.

The latest news is that a new photo periodical, entitled the *Hand Camera and Optical Lantern Journal*, is shortly to make its appearance under the editorship of Mr. C. W. Hastings. Well, “The more, the merrier” is the opinion of

TALBOT ARCHER.

PHOTOGRAPHIC LIMITS.

BY CATHERINE WEED BARNES.

[Before London and Provincial Photographic Association.]

WHEN so much is being said as to the true status of photography, what it can and cannot do, what it ought and ought not to do, I feel that a survey of the subject and the criticisms upon it might be made with profit. Save me from my friends, to say nothing of my enemies, might Photography well cry; for it is blamed, on the one hand, for its extreme accuracy, and, on the other, for not being accurate enough. The fact that such a question can be asked as, “Can photography lie?” and a serious an-

swer be expected, shows the exceedingly great misapprehension existing as to photographic limits. Why not ask, "Can a painter's brush lie?" It does that same thing many a time and oft. While journeying this summer, I saw a painter busy on a certain view, and, though his drawing was reasonably good, his coloring almost blinded me. A well-taken photograph would have been vastly preferable. In this connection I cannot but fear that, when those earnest workers who are trying to solve the photography-in-colors problem attain their end, they are going to be somewhat disappointed. Color may be obtained, but not atmosphere; and to an artist that means a great deal. The most ardent camera devotee must own that the scope of his beloved instrument is limited; but he has a right to demand those limits shall not be arbitrarily circumscribed, or that photography shall be looked upon only as the poor relation of painting. Photography suffers because it is ordered to confine itself, outside of pure portraiture, to scientific work mainly, and is told it should not trench on the artistic preserves. The camerist is fully justified, and the claim cannot be too often or too strongly made, in drawing on all the resources of both science and art to realize his mental conceptions. As painters use different brushes for different kinds of work, so the camerist uses different lenses. What may be a positive defect in a lens when used for one branch of camera work, proves often a virtue for another, and the artist is shown when the worker has skill and taste enough to reconcile the lens to the object sought. This means endless experiments, disappointments, exercising the most patient judgment, and, in short, attempting to adjust the too often conflicting claims of art and science in the photographic field. Although this is a broad and somewhat well-worn subject, there are still some things which can be said, and plainly said, upon it. Mr. Hinton's recent article, referring to work at exhibitions, should be widely and thoughtfully read, and its temperate tone gives it added importance. Exhibitions for the art side, pure and simple, have been held; but it should be suggested to the wise and good who preside at such exhibitions, or fill the post of judges, that art is sometimes confounded with liberality, and they are by no means one and the same thing.

Scientists labor to secure as nearly perfect instruments as possible, and then, if they do not possess the art instinct, are apt to quarrel with those who believe, not alone in elucidating some great scientific fact, but in turning the keen eye of the lens on the beautiful as well as the useful, studying its possibilities with a loving reverence until the senseless instrument seems to enshrine a living soul. I do not see any need for perpetually erecting this barrier, nor why those who keenly enjoy every new discovery in the pure science of photography should not also realize what great power it gives in developing the art side. The wonderful achievements of photographic science in the constantly expanding fields of human thought have, to some extent, bewildered people's eyes and affected their judgment. In its vastly increased facilities for work, photography is in danger of growing very much to one side, and that the scientific, unless the art fanatics, as some critics consider them, bring on such a thunderstorm occasionally as shall clear the controversial air, and allow photography to show what is possible in the way of broad, healthy growth. Why is it that, if we are so willing to acknowledge the tremendous strides made in strictly scientific knowledge, thanks to the lens, we are reluctant to acknowledge its power in the art world? Partly because photographers themselves as a body are not yet able to realize that the work is more than a pastime or a means of wage-earning; that, if they expect people to respect photography, they must prove its indubitable right to respect and give it constant and faithful study. Hundreds of photographers are not fit for their business, and very few, I am afraid, follow the custom of a distinguished Frenchman, and, out of working hours, study daily the effect of varied lighting on two figures, one draped in white and one in black. How many understand the importance of the quality and thickness of thin skylight glass as affecting the limits of photography? Artificial lights, such as electricity or flash-light, are good in their way, but are worse than useless in unskillful hands, justifying the reproach that photography is attempting too much. There is great room for

extending photographic limits in the studio if operators would be liberal-minded enough to open their eyes and cultivate their understandings. This means educating the public as well as the profession, and might rule out a large proportion of the latter; but that would be no loss, and the profession, as a whole, would gain immensely in the respect of men. Of course, a pint pot is not to be blamed for being such, but it should not attempt to hold the ocean.

A story told of Douglas Jerrold may illustrate this point. Once, an utterly incompetent author attempted to justify some of his poor work to the witty critic by the plea, "A man must live, you know!" "I don't see any necessity for it," said Jerrold. Many advanced photographers are, it should be said, ready to welcome new ideas, but are held back by the consideration that great changes involve, at first, increased expense, and sitters fail to appreciate that fact. Perhaps in no one branch of human knowledge have as great and varied improvements been made the past few years as in photography; but in some ways, while its limits have been extended, the work has suffered thereby. People are apt to imagine, not that real progress has been made, but that the trick has been more cleverly managed, so that in one sense the work was more honored when it cost more time and labor than now, when a vast world of appliances have made it easier. We do appreciate a thing more when we have to work for it.

While in England, nothing has impressed me more than the care given, on the whole, to making an exposure, guarding the plates from unsafe light, and, in fact, taking pains to do all the work well. It has been my privilege to work with some of the best known English photographers, and to learn many lessons thereby. I think in this connection that previous training in drawing and painting should be valuable as giving freedom from the usual cut-and-dried recognized methods in camera work. Neither microscopic definition nor indiscriminate fuzziness, neither hand cameras nor tripods, is the only true and to be accepted doctrine for camerists, but each subject should be studied as a painter studies his subject, and treated as will show it to the best advantage. If this means obliterating any part of the negative or print, it should be done without the slightest apology. In short, from the moment of taking the plate from the box to mounting the finished print, consider, and only consider, the effect you wish to obtain. There is a certain class of critics who say photographers have no call to attempt purely illustrative work, it is beyond their province; and they wax eloquent on those unfortunates who essay the *role* of original designers and translators of poetic ideas into visible pictures. There are, to be sure, poems utterly unfitted for photographic reproduction; but there are many, very many, others which could well be illustrated by the lens, and the result utilized in some of the beautiful processes now possible, so that the reproductions would deceive the very elect as to their origin. The fact that it is in our power in these days to use lenses of such widely differing power is vastly more than adding to a painter's stock of brushes, and he who seeks to do really artistic work must have a battery of them, take the time to consider which one will be best for the view desired. Many workers use a lens altogether too large for the plate, which is almost as bad as straining a lens beyond its capacity. The difficulty of using different lenses in one front board seems likely to be met by the adjustable flanges now on the market. Like every other part of the apparatus, the lenses should be easily and quickly adjusted, and every one have a cap for one end as well as the other.

Regarding landscape work, the matter of limits is simple, to define interiors far more so, and figures most difficult of all. But it seems to me that if a figure study tells without explanation the story it is intended to tell, the designer can well afford to be utterly indifferent to all derogatory remarks as to whether his picture is or is not what certain grumblers would call "just a photograph." One of the leading art critics of New York was showing me some photographs awhile ago, which I said were poor, but which he intended to reproduce in a well-known magazine. "You look at them," he said, finally, in a very positive tone, "merely as a photographer. I look at them as an

artist." "Pardon me," was my reply, "I have been a photographer a very few years, and up to that time worked in painters' studios."

When the camerist comes to the developing stage, the Scriptural injunction should be adopted of proving all things, and holding fast to that which is good. The danger, however, is that the more expert a worker becomes, the farther he is tempted to stray from the path of true art—simplicity, studying, not merely the most fitting medium for showing his work, but making it a means of exhibiting his purely technical proficiency. There should be far more attention paid to development, and no one but the operator should by rights develop the exposed plate. Then, too, comes up the question of what is hand-camera work? At a recent Society meeting it was agreed that, if a *bona fide* hand camera was placed on a tripod, its results were not really handwork. Considerable discussion took place, but it would seem as if we miss the real value of the work itself by raising such nice distinctions.

And now there is one more point which suggests itself, and that is, the true relations between professionals and amateurs. There should be no jealousy between the two detachments of the camera army, as both seek a common end, and can best attain it by united action. I do not believe in drawing a sharp line of demarcation, remembering what I personally owe as an amateur to professional advice and criticism. It has been my fortune to be thrown into close relations with the profession at several conventions and exhibitions in America, and have, despite occasional illiberality, received from the best part of the members only cordial kindness and respect. We can help each other and frankly own that fact.

In closing, let me say that this question of photographic limits is, after all, largely a matter of each worker's taste and skill. From the most careful scientific analysis to the most artistic conceptions, the lens obeys the will of the brain, using it far more broadly than some are willing to believe. The subject is one which could be followed into many bypaths and is too great for one evening's discussion. Let me put in a plea for fair judgment, a welcome for everything which will aid photographic progress in any and every field of human endeavor, and a reminder that such progress will be best attained by ignoring the point whether this or that branch of the work will be most benefited by each new discovery, remembering that advancement in one means advancement in all. Working on broad lines, keeping brain, eyes and ears receptive and liberal, we will in time place Photography in her true position before the world. Let her limits continually expand, and each and all lend a hand in the good work.

[From the *Photographische Correspondenz*.]

ON THE USE OF PHOTOGRAPHS IN THE PREPARATION OF PERSPECTIVE DRAWINGS.

BY PROFESSOR F. SCHNIFFNER, of Pola.

OFTEN the architect has to prepare a perspective drawing of an object from its vertical and horizontal sections. In theory this task is easy enough, but its practical execution is at least always tedious and takes much time, and in many cases of sections unobtainable or inexact it is difficult. This is probably why so many attempts have been made to construct an apparatus to do the work mechanically. I will mention only the perspectographs of H. Ritter, Fiorini and Hauck-Brauer. All these apparatuses are complicated and comparatively expensive.

Now, I would call attention to a process free from these evils, and which, as far as I know, was first recommended by Herrn L. Borchardt in the *Centralblatt für Bauverwaltung*, 1892, No. 16, namely, the use of the photographic camera in preparing perspective drawings.

As is well known, it is very easy to complete a perspective drawing of a building as soon as the horizontal section of the object is brought into perspective. This is soon performed with a camera with sufficient exactness, for the photograph gives the per-

spective of the object photographed. It is, therefore, necessary to bring the plan (geometrical plan) and the camera into such a mutual position that the photograph thus obtained corresponds to the desired view. How to proceed in order to accomplish this will depend on whether the standpoint and the position of the geometrical plane are given or not.

In the former case, we will mark the standpoint S and the geometrical plane E on the drawing of the horizontal section, and so place the camera with its focusing screen vertical, that the centre of the stop (more exactly, the first point of junction of the objective) is above the elevation of the standpoint chosen, and the ground glass parallel to the focal plane E .

If the distance of the standpoint from the geometrical plane is equal to the focal distance of the apparatus, the photograph may be used direct; if not then, it must be enlarged or diminished to correspond.

Should it not be necessary for the standpoint and the geometrical plane to have a given position, one looks at the image of the horizontal section lying horizontally on the focusing screen, and twists and shifts the camera till the image corresponds to the view desired, then takes the picture, and according to the principles of perspective explained in the *Photographische Correspondenz*, 1889, finds out the position of the standpoint and of the geometrical plane from the photograph thus obtained. As the entering of the altitudes is free from difficulty one can advantageously employ photography in the manner explained in perspective drawing.

[From Photography.]

A WORD IN FAVOR OF THE CARBON PROCESS.

BY PROFESSOR W. K. BURTON.

WHY is it that in these days, among the whole sea of periodical photographic literature, we see scarcely a word about the "carbon process"? There was a time when it seemed to occupy the attention of photographers, both amateur and professional, more than any other branch of photography.

We will be told it is because the platinotype process has superseded it. Now we wish to say no word against this last-mentioned beautiful process, but we would point out, in the first place, that neither the platinotype nor any other process at present known can do all that the "carbon" or, more correctly, the "pigment" process can; and, in the second, that there is a charm in the working of the older process that ought to endear it to the hearts of all enthusiastic amateurs, if only for the pleasure that is afforded by seeing a picture evolve itself during development from the dirty mess of gelatine and pigment. Our own pleasure was of the keenest when, after leaving carbon tissue untouched for several years, we took up the process again a few weeks since. There was enjoyment even in overcoming the difficulties due partly to long want of practice, and partly to working in damp, warm weather.

Let us see what are the advantages of the pigment process. In the first place, and beyond all other advantages, is the fact that any color can be got if the photographer makes his own tissue; that there is a great variety of color obtainable if he buys it. Permanence is, of course, an advantage of the real "carbon" process, and may be the advantage of the pigment process with a large choice of colors.

In addition to this, we have no hesitation in stating that, in the case of some kinds of negatives at any rate, the rendering of gradation (the "tone" of artists) is truer than by any other process. This is more markedly evident, perhaps, in the case of transparencies, than of actual prints, shadow detail that would be hurried in working by any other process coming out clear and distinct in a carbon transparency. This fact ought to recommend the carbon process to all who make lantern slides directly from small negatives.

There is an exaggerated idea of the difficulties of the carbon process. Truly it is not an easy process if, as has been the case with the writer, it is necessary to make the tissue, and, indeed, it is not as easy as the more popular printing processes, even when the tissue can be bought ready made—nay, even ready-sensitized; but the difficulties are not really great, and are of such a kind that the amateur photographer, at any rate, ought to have a pleasure in overcoming them.

We have said that the pigment process ought to give permanent prints, whichever of many colors be selected, and we believe it is the case that, at the present time, the pigment in all the darker colored tissues issued by any respectable dealer consist chiefly of actual carbon, while the pigments of all the colors commonly issued are, in the ordinary meaning of the word as applied to prints, “permanent.” It has not always been so, however. When the process first became at all practicable, it is believed that only real carbon, in the shape of lampblack, was used; but, strange as it may seem at this time, the “engraving black,” if true carbon, was considered the reverse of an advantage in these days. What was demanded was “photographic purple” and “photographic brown.” In fact, the “carbon process” had to imitate, as exactly as possible, the common silver print on albumenized paper! “Photographic browns” and “photographic purples,” accordingly, were supplied, but therein was that which damaged the process more than anything else, for these colors were got with a fatal facility by pigments that were *not* permanent—lakes, if we have been properly informed. Even if the pigment were partly lampblack, the warm tint only being given by an evanescent red pigment, this warm color disappeared after a time, and, as we have said, purples and browns were demanded in these days. It was at the time that the process was popularized by Lambert, a certain modification of it going by the name of “Lambert-type,” that these evanescent pigments were most used. We remember reading a very animated correspondence in the American photographic press on the relative advantages and disadvantages of silver printing and pigment printing, and we remember that one of the correspondents boldly stated that one of the disadvantages of “carbon” prints was that they were less permanent than silver prints! “silver prints,” meaning prints in silver on albumenized paper. To what a pass must the poor “carbon process” have come at that time.

It was only when the reaction in favor of “engraving black” in photographs had set in, or that the first seeds that led to the reaction had at least been sown, that photographic colors of guaranteed permanency could be got by the carbon process.

The common surface of carbon prints is against them at the present day, when anything approaching gloss is so severely condemned; but it should be known that “gloss” is not an inevitable attribute of the process; that a matt surface can be got with a carbon print as well as with any of many other processes.

In conclusion, let us strongly recommend this process to the amateur to whom the working of a beautiful process is a pleasure in itself, and is not the less a pleasure because there are some slight difficulties to be overcome; and let us recommend to the photographer who is an artist at least to try the effect of a large head in the red tissue that is issued by, at any rate, one firm in England, or to try any other subject that can be well rendered in red. If he is an artist he will know what subjects may be, what may not.

PRACTICAL PHOTOMICROGRAPHY.

BY MR. A. F. STANLEY KENT, M.A., F.G.S.

[Read before the Camera Club.]

IN a paper like the present, photomicrography may be treated in various ways, and regarded from various points of view. It may be treated historically, and its rise and progress traced; or it may be treated from an especially modern point of view, and its latest triumphs brought prominently forward; or, again, it may be treated practically, and merely as a means to an end.

It is in the last of these ways that I propose to treat the subject, and I have accordingly chosen "Practical Photomicrography" as the title of my paper.

And inasmuch as the time at our command is far too short to allow of so large a subject being discussed at all exhaustively, I propose to confine myself exclusively to my own experiences, and to recount to you the difficulties that have at various times presented themselves, and to explain to you the methods I have adopted to overcome those difficulties.

Consequently, I have not chosen any elaborate series of specially prepared slides to illustrate the highest flights of modern photomicrography, but, on the contrary, have selected a few slides and a few negatives, the majority of them bad or indifferent, a few good, in order to illustrate some of the special faults and difficulties to which I wish to draw your attention; for it is by no means to the expert that I am speaking, but rather to the beginner and to those who have made sufficient progress to find themselves confronted by difficulties that seem at first well-nigh insurmountable.

And I may say at once that my photomicrography is of a peculiarly utilitarian nature, my object being, not to perform a difficult feat for the sake of overcoming difficulties, but rather to produce a lasting record of appearances presented by some special microscopical preparation.

One of the first essentials to good microscopic work is a stand of first-class workmanship; for, while it is quite true that work with low powers may be done with low-priced instruments, it is, nevertheless, a fact that for really good work, and more especially for work with the higher powers, the very best of everything in the way of apparatus is absolutely essential.

The microscope stands made by Carl Zeiss, of Jena, are in very general use in laboratories, and, owing to the perfection of their workmanship, great advantages are to be gained from their use in photomicrography. Some workers prefer a tripod foot in place of the ordinary horseshoe, and certainly such a form has advantages, being more steady, and allowing the microscope to be placed at almost any inclination without affecting its stability. If the stand is to be used in a vertical position, however, the horseshoe foot will be found as convenient as any, and it is far more portable than the tripod.

So far as the stage is concerned, again, individual tastes play a large part in the selection, the simple stage being held to be amply sufficient by some workers, while others regard a mechanical arrangement as almost a *sine qua non*. Personally, I should be inclined to recommend that in the case of a microscope to be entirely devoted to photography, and more especially if any considerable amount of high-power work were contemplated, a mechanical stage of the best construction should be selected.

The length of the microscope tube is an important matter, and one about which there has been much discussion; but, inasmuch as several makers are now making microscope stands with a series of draw tubes, which enables one to vary the tube length from something less than the Continental to something greater than the English length of tube, it is possible so to arrange the apparatus as to work at any length that seems to give the best results. And in this connection it may be said that perhaps it is well to use always the objectives adjusted to the English tube length and the corresponding eye-pieces, as in a case of necessity these appear to perform better in the short tube than do those adjusted for the short, if used in the long, tube. A few years ago it was a very important matter to see that the inside of the microscope tube was uniformly dull black all over, and it often became necessary to insert a tube of black paper or velvet in order to get rid of reflections from parts of the tube accidentally worn bright. Much of this inconvenience is now got rid of by the use of the projection eye-pieces of Zeiss, which are so made as to cut off reflections from the inside of the tube. For other reasons also these projection eye-pieces are to be strongly recommended.

In those microscopes that are to be used in a horizontal position, it is necessary to

have a stop to catch the instrument when it has been turned down exactly to the horizontal position; and, in any case, such a stop is often of use, and should not be absent from the stand.

The mirrors should be large and capable of being accurately centered, for although they are seldom used in the horizontal position of the microscope, yet cases do arise in which it becomes necessary to use them; and, moreover, they will often be necessary for ocular observation.

The stops are of two kinds—ordinary and iris. The latter is by far the most convenient, but, unless of good workmanship, is liable to wear bright and cause much trouble. Some of the iris diaphragms in the market are so badly constructed, that the aperture, when made small, is neither central nor circular.

The objectives to be used should possess at once flatness of field and coincidence of chemical and visual rays. Unfortunately, it is not easy to procure such objectives at a moderate price. Zeiss's double series A A, B B, D D, etc., are good as far as coincidence of visual and chemical foci is concerned, but the field is not flat. This want of flatness can, however, be remedied to some extent by using as low an objective as possible, and gaining the necessary amplification by means of a long camera extension.

In the case of higher powers, the chemical and visual foci usually correspond fairly accurately, and adjustment is rarely needed; but here, again, the field is often far from flat, and some such device must be adopted as that suggested above for low powers. Much of this difficulty is got rid of by the use of objectives specially corrected for photography, and the apochromatic lenses introduced by the firm of Carl Zeiss, and now manufactured by several opticians in England and abroad, have many advantages, and, notwithstanding their high price, must be regarded as absolutely necessary for the production of the best work. For ordinary work, however, the $\frac{1}{2}$ oil immersion of Zeiss, of either 1.20 or 1.30–1.35 N. A., is very good, and capable of turning out extremely good work.

At the same time, if a large amount of difficult high-power work is contemplated, there cannot be the slightest doubt that it is true economy to buy the very best objectives that can be procured. And it may here be stated generally that objectives having as high an angular aperture as possible, and, in fact, giving the best possible image when used in the ordinary manner, will be found best adapted for photographic work.

Moreover, the apochromatic objectives are specially intended to be used with the projection eye-pieces of Zeiss, and, as these are essential, it is certainly better to use the specially adjusted objectives with them. With the higher amplifications, the ordinary compensating oculars may be used, as no advantage is gained by the use of specially constructed projection eye-pieces, and consequently these are not manufactured.

In the arrangement of the apparatus much will depend upon individual circumstances, and the space that can be devoted to this special work. Much good work may be done by means of apparatus of a very primitive nature; but here again the enormous difference between fairly good low and medium power work, and first-class results with the highest powers, is very obvious; and to attain the latter it is undoubtedly necessary, not only to be able to devote a considerable amount of space to the arrangement of the apparatus, and a considerable amount of money to the purchasing of the best appliances, but, in addition to these, to devote a very considerable amount of time and thought to the perfecting of details, about which it is almost impossible to give directions in written paper, or even by word of mouth, unless the apparatus is actually before one.

There are in the market at the present time complete forms of apparatus made by various firms at home and abroad (Baker, Swift, Watson, Zeiss, etc.), and anyone commencing photography can scarcely do better than take the advice of a competent person as to certain necessary modifications in these forms of apparatus, and then give

an order to one of the above firms. In this way much time and trouble will be saved and much dissatisfaction avoided. It must not be forgotten, however, that the form of apparatus most suitable depends very largely upon the kind of work to be performed, a horizontal apparatus being quite unsuitable for work involving the photography of bodies floating in fluids, such as bacteria in bouillon or corpuscles in blood, and the vertical apparatus being generally less suitable for other kinds of work.

(To be continued.)



OPTICAL GLASS.

BY J. R. GOTZ.

[Before the Photographic Club.]

A MORE exact title for the paper would have been "Glass for Optical Purposes," although that is not a sufficiently precise definition, as all glass which we apply in order to see through it is, in a sense, "optical." But I should have to use a pretty longish term to define exactly what is meant by glass for optical purposes, and we may proceed to the more concrete part of our subject without leaving any doubt in our minds as to what we are talking about.

ANTIQUITY OF OPTICAL GLASS.

We know for a fact that optical glass was in existence before the Christian era; I do not mean to say that it was equal to Chance's dense flint, but being used "optically," it was optical glass—at least, in its application. Claudius Ptolemy, the Alexandrian astronomer, living about the second century B. C., wrote a treatise on optics, refraction and reflection, and on lenses and mirrors. Copies of his works are said to exist in the Bodleian Library at Oxford, and in the Royal Library at Paris. We are, therefore, not talking about a new thing, either as regards lenses or with regard to "optical glass." Other works of a similar kind exist, one of the best known being that of Roger Bacon, who, in the thirteenth century, wrote his *Opus Majus*. He has, in fact, been looked upon by many as the inventor of the microscope, and the telescope too. We are not told where his "optical glass" came from.

You are all familiar with the story of how Galileo came upon the form of telescope which bears his name, but he does not possess the laurels alone, for we have it recorded that telescopes were made in the year 1600 by a Dutchman named James Metius, at Alkmaar, in Holland.

During all this time optical glass must have been procurable from somewhere. It is, however, very evident that the make of what we now understand by optical glass must be a modern thing, for it is evident that before Newton showed the different refrangibility of different parts of light, there could have been little room for such an establishment as the one now in existence at Jena, where glass can be had to order with a given index of refraction calculated beforehand to the third and fourth decimal for any part of the spectrum.

WHAT IS OPTICAL GLASS?

Glass was made, we know, something like 1600 years before the Christian era, in Egypt, and, as it was soon ground into lenses, it must have been "optical." When glass becomes so pure that we can speak of its refractive indices, and of its spreading or dispersing the light in regular or even measurable ratio, we look upon it as optical. The crown and flint glasses so-called, are those we use for optical purposes. Crown glass is a plate glass, or *vice versa*; flint is a glass charged with lead. That for optical glass the finest and purest of materials must be used goes without saying. White sand is used, pearl ashes, borax, cobalt, manganese and other ingredients, and as a matter of fact, hardly any glass is made without the addition of some pieces of broken glass of the same kind. Flint glass is also made of fine white sand, red lead, fine pearl ashes, nitre, arsenic and manganese. Many of the modern optical glasses

contain other additional substances, which I shall refer to later on. Flint glass was formerly made from flint ground up; but I understand it is not used now.

In England, Chance Brothers, of Birmingham, have for years produced some fine specimens of optical glass—notably, their heavy flints; and in France, Feill, of Paris, has made glasses in many instances exactly of the same character. In Germany nothing was produced on any large scale since the death of the great Fraunhofer in 1826—who made his own glass—until lately, when, after some experiments, carried on during a number of years, the scientific world was taken by storm with a series of glasses such as we had never had before, opening up new means of improved construction for all sorts of optical instruments, notably also the ones that will interest you most—the photographic objective.

It is very evident that, as far as the manufacture of optical glass on a truly scientific basis is concerned, there was much left to be desired by the state of things up to 1885 or 1886, and there was no means of eliminating certain errors of achromatism entirely, even from the finest instruments of the most renowned makers.

Several attempts had been made, notably in England, to bring about a more satisfactory state of things, and after the work of Fraunhofer had been cut short, an Englishman, Harcourt, made experiments between 1834 and 1860, in all about one hundred and sixty different pots, but he had not the technical assistance necessary; and, apart from some attempts which seemed to point in the right direction, he wasted much time in making glass containing titanium. This glass, which he principally made with a view of eliminating the secondary spectrum, did not answer, but it showed the possibility of getting rid of this secondary spectrum once the right material was found and applied in the right way.

ABBÉ AND SCHOTT'S EXPERIMENTS.

Professor Abbé is said to have come to the conclusion that the then existing state of things with regard to optical glass specially for microscopes could only be remedied by the creation of entirely new materials, and he gained this conviction after a visit to the exhibition of scientific apparatus in London in 1876. He communicated with Dr. Schott, who then lived in Hanover, and the idea of creating a new establishment for the production of improved optical glasses was accepted by both.

The principal object was to produce such glasses that would allow the elimination of the so-called secondary spectrum from the objectives, especially from the microscope, the instrument which suffered more than any other from this defect. Experiments were begun in 1881 and conducted on a small scale until 1883. From that date experiments on a large scale were undertaken, and with the help of some 60,000 marks contributed by the Prussian Government from the fund set apart for scientific research, many new kinds of glass were experimentally produced which, in combination with others of the known or of new kinds, would allow of combinations in which the chromatic or spherical aberration could, to a greater degree, be corrected, and the secondary spectrum be almost eliminated.

This is accomplished by improved crown and flint glass mostly with mixtures of boracic or phosphoric acids, while greater variety in the refractive and dispersing powers of the glass was obtained by applying baryta, magnesia and zinc oxides. Thus, up to now, something like eighty different kinds of glass have been put on the market, and experiments have extended to more than one thousand kinds of glass or compositions of glass.

The materials that have finally been adopted are several series of new glass, as the phosphate crowns, barium phosphate crowns, boro-silicate crown, barium silicate crown, etc., borate flint, boro-silicate flint, a special silicate flint, and a light baryta flint.

ADVANTAGES OF THE NEW GLASSES.

The great advantage which the constructing optician has gained by the establishment of this furnace is, that he can obtain any of the glasses enumerated in the cata-

logue always alike, and with increased precision for the measurements of the refractive indices. Nay, more, he may require a glass slightly different in refraction at one or the other part of the spectrum, and he can obtain it; but the variety is in itself so great that for almost any special purpose a glass will be found that will answer. Moreover, formerly, every batch of glass turned out had to be examined in the spectrometer, and its refractive indices ascertained, while now they are precisely given for every pot, as well as the amount of dispersion for the principal parts of the spectrum, and the specific weight. As most of you know, the usual mode of specifying glass is by giving the refractive indices of the sodium line D (double line), and of the three hydrogen lines, C, F, and G. The measurements at Jena are, however, also made on the line A, the potassium double line, so that their measurements are made on five lines of the spectrum, A, C, D, F, G.

Their catalogue indicates for every kind of glass, the refractive index for D, the brightest part of the spectrum, the mean dispersion from C to F, following which is given the proportional or relative dispersion. The glasses are enumerated in order of this last factor, which allows at a glance a comparison of the refractive and dispersing values of glasses intended to be combined.

I found, some years back, that in some heavy flints made by Chance, these indices agreed exactly with some glass of the same kind made by Feill, of Paris, so closely as to show the same figures up to the third decimal. If you had asked any of these makers to make two pots of glass exactly alike to that degree they could not have done it, or, at least, could not have guaranteed it to come out absolutely the same. Hence a new batch of glass had to be studied spectrometrically before much else could be done with it, and much of that labor is saved to the constructing optician now by the precision in which the Jena people specify their productions.

Such a profusion of new material is a great boon to the constructing optician who has been hampered by the insufficiency of the material at hand formerly because of the impossibility to fully achromatize with flints and crown glasses, or even with two flints combined, because of the disproportionate dispersion of most, if not of all, the heavy flints, as compared with that of crowns or of light flints. Many of the new glasses combine much better, and the result is that lenses can be constructed giving much flatter fields with the same angular apertures and better achromatism into the bargain. When the combined glasses allow the achromatizing in three different parts (colors) of the spectrum, the so-called secondary spectrum is said to be eliminated, and the correction is for most purposes complete. This is of great importance in microscopic lenses, but for photographic lenses it is of less consideration.

IDENTITY OF JENA AND ENGLISH GLASSES.

We find that at Jena they now produce exactly the same glass as the former glass made by Chance Bros., as for instance, their No. 8, which we learn to be a "calcium silicate crown." There is another, No. 12, also corresponding to Chance's "soft crown." It is a "barium silicate crown." Their No. 38 again corresponds to Chance's extra dense flint. They call it "heavy silicate flint." And, finally, No. 40, another heavy silicate flint, corresponding to Chance's double extra dense flint. You will see that all these flints have a high index of refraction for the D region of the spectrum, such as 1.7174 for the least and 1.65 for the former.

You will see, by a perusal of the Abbé-Schott catalogue, that for photographic purposes mostly the silicate crowns or flints are useful, and also some of the baryta flints, most of which are colorless, or nearly so, while the borate flints are not to be employed for photographic purposes, on account of their being affected by the atmosphere. They will, however, be valuable for the microscope, where they can be protected by another kind of glass forming the outer lens or lenses.

SOME PROPERTIES OF THE JENA GLASSES.

The glasses which have proved to be of great value to the photographic optician

and photographic purposes generally, are the baryta light flints, on account of their proportional high refraction, that is, a refraction of a considerable angle. This permits of lenses being ground with much flatter curves, inner and outer, and the result is a much flatter field obtained at the focal plane. As an instance I can mention Suter's new rapid aplanat D, which is made of such glass, and was, in fact, one of the first lenses manufactured out of this material, the curves of which are much less deep than any lens previously made of such intensity, viz., $f=5.5$, No. 2 U.S.

Voigtländer had made a lens of nearly the same angular aperture previously, but I do not believe they were kept going for any length of time, and the series have disappeared from their catalogue or are replaced by lenses of a newer construction. Suter had, in fact, made a lens previously of the same aperture ($f=5.5$, No. 2 U.S.), of which there were issued some few; but they were dropped in favor of the new construction which the Jena glass permitted, and a great gain in even illumination, rapidity and flatness of field was the result, besides a much more complete correction of chromatic aberration. Dallmeyer had also once produced a lens said to have had almost double the aperture of a rapid rectilinear, but it was not, I understand, issued on the market. I am, of course, speaking of cemented double combinations, not of triplets or lenses with separated back glasses.

These attempts of opticians to construct lenses with greater apertures, and so few faces only, were frustrated simply on account of the want of a suitable material. Now that the material is at hand, no difficulty exists, and in the hands of our able opticians plenty of these instruments, of excellent quality, are produced. The usual objection which was made as to using the new material, the one that it did not keep, has now pretty well been silenced, and English opticians, after some hesitation, have begun to use the material freely, and will no doubt produce excellent instruments from it.

The values of the several series of new glasses have been ably brought to the practical test by the Zeiss anastigmats, which are now largely manufactured and for which license has been granted to a number of leading opticians, such as Voigtländer, Suter, and, in England, to Ross & Co. These lenses accomplish successfully what was, with the material previously at hand, tried repeatedly, but not with good results, viz., a lens of the rapid type, that is, with an aperture of $f=8$ and larger, which, at the same time, can be used as a wide-angle lens, and which, with the full aperture, already embraces a covering angle of about 60 degrees, as is the case in the Series III.

MANUFACTURE OF THE GLASS.

With regard to the manufacture of the glass, it would be a vain attempt to write a description without a good set of illustrations; but some idea may be gained of the nature of the operations when we are told, for instance, that the making of silicate glass will take close upon three weeks. The pot, or crucible, in which the glass is to be "cooked" is, after being well dried, heated during four or five days until it attains a red heat; it is then put into the oven where, as soon as it has reached the temperature of melting glass, a few pieces of glass of the kind to be made are put into it, and as they melt the inside of it is well glazed out with the molten glass.

The crucible is now filled with the sand and chemical substances that are to make the pot of glass to be produced. When this is thoroughly melted and worked into a homogeneous mass the crucible is brought to a greater heat still, which is supposed to thoroughly digest the pot of glass and drive all the air out of it; this lasts six to eight hours. The glass is now tried after being thoroughly stirred with a rod, and found homogeneous and free from air bubbles and clear. It is then tried on the blow-pipe. If the pot proves to be in good condition it is taken out of the oven by a crane; it may weigh some fifteen or twenty cwt., or about a ton. It is then left to stand and "gently simmer" so as to cool down a little, is then brought into another oven, in which a second crucible has undergone the preliminary warming process, and which is intended for the next pot of glass of

the same or a slightly different composition. In this oven the glass is left about three days to cool; the contents harden up—dry up—as the melters say, and on “drying,” or hardening, break up into a number of fragments.

The crucible is now broken up and the contents cleaned of any impurities. The clear transparent pieces are next subjected to the “setting” process. By this they are heated to about melting point, having been laid into molds, where they adopt the desired forms of discs or slabs as required. This is done in a special oven, to which a cooling oven is attached. The cooling takes ten to twelve days, and the pieces are finally taken out, and two edges or faces are cut, so that through the polished surfaces—which, as you see in the samples, are always opposite to one another—the glass can be examined. The net result of usable glass amounts to about twenty per cent. of the quantity melted in a pot, and that is considered a good percentage.

This is the ordinary procedure for the bulk of glass intended for ordinary purposes. For special glass, such as large telescope object glasses, a special process of cooling is employed, of which I can give you no specific information; but a circular of the firm of Schott sets out some points of examining discs of sizes up to, say, fourteen inches, and for which they have adopted what they call fine annealing, which consists in storing the glass in a vessel, the temperature of which can be accurately measured, and which is made to cool down at a very slow and uniform rate, and can be regulated according to requirements.

TESTING THE GLASS.

Most of you may be acquainted with the mode of testing such discs or lenses by use of the Nicol prism. It consists of placing a lens or disc of glass, or a plate, between two polarizing prisms, rotating the one until the light is polarized, and then observing the more or less regular figure of a cross on the disc; the regularity of the cross proves the homogeneity of the glass. An irregular cross will be proof of tension in some parts of the disc.

It now remains only to put before you some of the samples that I have here to show, most or all of which are suited for photographic objectives, and all of which, I am told, may be looked upon as unaffected by the atmospheric influences. Most of these glasses are almost free from color, and you will see that a number of them are light flints, which now take the place, in a great degree, of the former heavy flints, by which alone the high index of refraction necessary for some instruments could be obtained. This is, as I have shown, a great gain.

THE HELIOCHROMOSCOPE.

BY F. E. IVES.

[Read before the Photographic Society of Philadelphia.]

It was in 1888 that I first described and demonstrated, at the Franklin Institute, a method of reproducing the natural colors by photography, which differed in certain vitally important particulars from somewhat similar processes which had already been carried out by Cros and Du Haaron in Paris, Albert in Munich, Bierstadt in New York, and others. I succeeded in reproducing the natural colors in landscapes and various objects with a degree of accuracy which I have good reasons to believe had never before been approached by any method without the intervention of the artist's brush. The procedure was, however, too complicated and difficult for profitable commercial application, and comparatively few specimens were made.

I now present to your notice devices which so greatly simplify the operation of the process as to make it quite possible to place it in the hands of even the “press-the-button” class of amateur photographers, and yet yield results that

are no more defective in color-rendering than the ordinary photograph is in the rendering of monochrome light and shade.

The first of these devices is a camera attachment by means of which the three pictures representing the effect upon the three fundamental color-sensations are made by a single exposure on a single sensitive plate, and from a single point of view. The device as now perfected is surprisingly simple, being comprised in a small box which may be attached to the front board of an ordinary camera. The division of the light-ray is effected by transparent mirrors, as in some of my earlier cameras, but in such manner as to dispose the images symmetrically on a single plane, without altering the position of the camera in relation to the object.

The second device, which I call a heliochromoscope, contains the same arrangement of mirrors, turned about so as to serve to recombine the three photographs in such manner that the photographic color-record is translated into color again as readily as the sound-record in the phonogram is translated into sound in the phonograph.

The most important advantage of this device is that it may be used at any time, at a minute's notice, like the stereoscope; and, as almost everybody may possess one, it is competent to make the realization of color-photography a household affair. It also more completely fulfills the theoretical conditions of success than either the production of color-prints or lantern projections, and produces an illusion of nature more perfect than would be possible with even an absolutely perfect color-print on paper, because the picture is seen without surface reflections or distracting surroundings.

I claim for this system of color-photography that it is perfectly rational and scientific, and a true solution of the problem of reproducing the natural colors in a photographic picture. This claim meets with a good deal of opposition in the minds of some people, whose mental attitude is a source of wonder to me, because the same sort of objections that are made to the triple photograph would apply to the stereogram and the phonogram. One is an automatic record of color, another of binocular vision, and another of sound; each must be placed in a special device in order to reproduce that which it has recorded—the triple photograph or chromogram into the heliochromoscope, the stereogram into the stereoscope, and the phonogram into the phonograph. I do not remember ever to have heard the stereogram denounced because it is not a single print with embossed relief, or the phonogram because it has no lungs.

Some even go so far as to deny that this can properly be termed color-photography at all, although the same individuals are in the habit of calling pictures that cannot be made to show colors "orthochromatic" or correct-color photographs. But the most extreme illustration of this peculiar attitude of the mind that I have seen is the assertion of one who, if I am not mistaken, has aspired to be the historian of photography, that this is merely "looking at ordinary photographs through bits of colored glass!" To be consistent, this writer should describe the stereogram as "two ordinary photographs, mounted on the same card," and the phonogram as a "wax cylinder having a roughened surface like an ordinary file." I believe he did recently write a history of photography, with "an introduction to its latest developments," without once mentioning color-sensitive plates.

I speak of this kind of criticism because it comes from men whose writings

are in demand, and proves the existence of a deep-seated prejudice, which I have encountered in the development of other applications of photography, and which must be combated in order to overcome it. I will give an illustration: When, in 1880, I succeeded in realizing a mechanically accurate and practicable method of half-tone block-making, I could find only one engraver who believed there was a future for processes that rendered the shading in equally spaced graduated lines and cross-lines. Engravers, printers, publishers and photographers were agreed that if a block be made up of lines, those lines must follow the contours of the object depicted, as in the conventional wood-engraving. Since that could not be done, a grain, similar to the well-known lithographic grain, must be substituted for the line-tint. I declared that the objection to a regularly lined tint was a prejudice, stuck to it, and already, within twelve years, plates having that same lined tint have come into such extensive use as to replace millions of dollars' worth of wood engravings. They are used in illustrating books and periodicals of the highest class, and the advantages of the mechanical lined tint are such that it threatens even to invade the domain of photogravure. Mr. Louis Levy exhibited such results at the last monthly meeting of the Franklin Institute, and I myself applied for a patent on a printing-plate of this character, more than a year ago, having first experimentally demonstrated certain important advantages which they can be made to possess.

We did not make half-tone printing-plates of the kind that engravers and printers and publishers thought they must have, but they have concluded to take what we did make, and are taking them more and more every year.

We have not made photographs in the natural colors of exactly the kind that people have been looking for, and there is good reason to doubt if such a result will ever be accomplished; but we have actually realized, by a process almost as simple as stereoscopic photography, results better than can even be hoped for in color-prints, and so perfect that they must ever represent the standard which results by any other method must be made to approach in order to be acceptable. A good many people seem to think that this is not what they want; but I have quite as much faith in the future of the heliochromoscope as I ever had in the future of the half-tone block-making in line. It has been a revelation to me, and I believe it will be to the whole world.

I met a professional artist in London, a clever painter of both portraits and landscapes, who spent what seemed to me a very long time studying a bouquet of flowers reproduced in the heliochromoscope, and left it only to return to it again and again, as if it fascinated him. At last a friend asked him for an expression of opinion upon the merits of the device. After some hesitation, he said that he had attended one of my lectures at the Royal Institution, hoping and expecting to go away and report the failure of another attempt to reproduce the natural colors by photography. He had not been able to do so, but was forced to confess that color-photography is a fact. The demonstration was conclusive to him. The heliochromoscope will have no better friends than the artists, for whom it will not only reproduce Nature, but the masterpieces of art as well, in such manner that they can be studied in far-distant lands almost as well as in the galleries where they repose.

In the far West I met the representative of a large New York firm of importers of Oriental rugs. He assured me that he was ready to pay a hundred

dollars out of his own pocket for a duplicate of the heliochromoscope that I showed him, with a set of photographs of the rugs that he carried about with him, only to show their colors. It would save his firm a good deal of money that went in expensive sample rugs, and in cost of extra baggage, and it would save him a good deal of trouble. A professional house decorator spoke much to the same effect. Evidently, the heliochromoscope will have many fields of usefulness—so many, perhaps, that its function as a source of drawing-room entertainment, for which alone many have supposed it to be adapted, will prove of secondary importance. But I shall be greatly surprised if, even for the latter purpose, it does not become more popular than the stereoscope ever was, although it is necessarily a much more expensive instrument.

[From Photography.]

A TERRIBLE MISTAKE.

BY THOMAS B. WALSHE.

As one who has suffered terribly from the result of an accident brought on by the gross carelessness of a photographic firm of chemists, I think I am in duty bound to all photographic workers and lanternists to give you the particulars of a fearful explosion, and sincerely hope that it may be a warning to all makers of oxygen gas.

Being asked by the Rev. G. C. Bruton, M. A., Oxon., rector of Rathbarry, to illuminate some *tableaux vivants* by the aid of the lantern, I sent to a firm of photographic chemists for six pounds of oxygen mixture, viz., 4 parts chlorate potash and 2 parts of black oxide of manganese. The 6 pounds of mixture came by parcel post, labeled "Oxygen Mixture."

I weighed out $1\frac{3}{4}$ pounds of the mixture, put it into the retort (a safety one), and placed the retort on a small fire in my studio. In less than one minute a fearful explosion occurred. How I escaped, Providence alone knows. The roof and side of my studio were blown to pieces. Skin and flesh were burned off my left hand from the finger-nails to the elbow: My right hand also. My face and throat were one mass of cuts, and my eyes were so terribly injured that the doctor thought I would be blind for life. The retort was made pieces of, and twisted in all shapes. The firegrate was also blown to bits and the bars of the grate entered in the cement wall opposite (11 feet) to the depth of half an inch. The report was heard at a great distance. I think I must have been in a stooping position at the time, and the roof and side of my studio, being nearly all glass, gave way at once; otherwise, very likely, I would not be alive to pen this letter. After the explosion, blind and bleeding as I was, I made for one of the doors (there were two). I succeeded in gaining the open air and I fell (there is a small flower garden in front of my studio). The feeling was something fearful; the fumes given off were like so many sharp knives cutting the throat inside. I was quite exhausted. Another few seconds and I am sure I would have been suffocated. I shall not dwell on my sufferings for weeks after; I shall only say that I was eleven stones weight, and when weighed by a medical gentleman of high standing to whom I went to consult about my health four weeks later, I only weighed 8 stone 11 pounds. I had to undergo two operations for my eyes.

I got the mixture analyzed at once, and what do you suppose it was? The mixture I got to make oxygen gas from was composed of chlorate of potash and sulphide of antimony—not a trace of manganese.

My principal reason for writing this is, now that the lantern season is at hand, it may be a warning to all your readers who make their own oxygen gas, and perhaps avert a similar occurrence.

ROSCARBERY, Co. Cork.

[From the Practical Photographer.]

THE PALL MALL EXHIBITION.

WE have carefully held aloof from the disputes which arose out of the last exhibition, and which, as it seems to us, were calculated to bring no great benefit or credit to either party. Perhaps there is room for the old exhibition and also the projected new one. At any rate photographers will be long before they forget the good work that the parent society has done in past years, and the promised competition may result in the infusion of new life, and so prove a blessing in disguise.

The present exhibition, to which many people looked forward with a little distrust, is such as to encourage the executive and to give but little satisfaction to the opposition. There is nothing very new or exceedingly striking, but there is a very high average of quality, and no lack in the quantity of work shown. The hanging and arranging have been very satisfactorily done, and the judges have evidently been pleased with the work shown, for they have awarded no less than fifteen medals for pictures and apparatus.

One noticeable feature is the extent to which chloride paper is used and misused. Both matt and enameled surface prints in all sorts of tones are to be seen, many of them about as unsuitable to the subjects as they well can be. The best example of really good chloride work is No. 5, "Marsh Idylls," six studies of sheep by Mr. Carl Greger. For examples of bad chloride work there is no need to seek far; they are numerous.

As last year, we think, that portraiture, on the whole, shows more advance than landscape. We miss Van der Weyde's work, but there is much good and careful portraiture, both by old and new exhibitors. We hope to see more and more every year of exhibition work from our professional friends, and would commend to their attention the numerous small pictures exhibited by H. Yeo (143, 308-312, 519-523, 533-537, and others), which show that really artistic work can be done in ordinary studio practice. As works which are in no sense special studies, but *bona fide* commercial portraiture, these take rank amongst the best series shown for many years. For two of his subjects, 143-144, Mr. Yeo takes a well-deserved medal.

No. 146, described as "A Portrait," by F. Müller, is an exceedingly fine old head, also medaled. No. 170, "How's That?" by R. H. Lord, is a work full of lessons—two old men seated on a long settle in a country tavern, before them table and mugs. The whole arrangement is simple, the accessories common-place and unobtrusive, and the picture tells its tale directly and well.

The best figure studies in the exhibition are two by Mr. J. E. Austin (184-185), entitled respectively, "Worn Out" and "To Account Rendered." They are noticeable for the breadth and simplicity of treatment, and for careful subordination of backgrounds and accessories. Another study of Mr. Austin's (463), "Ain't this Prime?" is liable to be missed, because it is on a screen, but it should not be overlooked. It is a capital example of simple and easy pose and excellent expression.

In the pictures, other than portraits, perhaps the most interesting thing on show is Mr. Ben Acre's "Story of a Cloud" (162). It gives five views of the same cumulus cloud, from its rising above the horizon to its dispersal in the blue sky, and is work alike useful to the artist and to the meteorologist. The prints are produced in blue

carbon by Messrs. Elliott & Son, and though the blue is too deep and too purple, if intended to represent the actual blue of the sky, the general effect is very good indeed.

These few brief notes are but first hasty impressions, and we shall return to the subject to treat of the pictures—portraits, rather—at greater length next month.

The Press View on the morning of Saturday, September 24th, was attended by an unusually large number of representatives, showing that the interest taken in photography by the general press is as strong as ever.

The soirée on the evening of the same day was an influential gathering, and as large as the room could comfortably hold. All the well-known faces were there, including many provincial members, and all were received by Captain Abney, Mr. Chapman Jones and Mr. J. Traill Taylor. The opinion on the exhibition seemed universally favorable.

[From *Astronomy and Astro-Physics*.]

THE PHOTO-ELECTRIC CELLS.*

BY G. M. MINCHIN.

THE cells which are employed for obtaining electro-motive force from the light of the stars and planets are known as seleno-aluminium cells. They are constructed in the following way: Take a small flat strip of aluminium about a quarter of an inch long and one-sixteenth of an inch broad; let this be heated on a clean iron plate placed over a Bunsen flame, and while it is hot let a very small bubble of melted selenium be rapidly and uniformly spread by means of a hot glass rod over about one-third of the length of the aluminium strip, the selenium forming a very thin layer. When this layer is spread, the little plate must be rapidly removed from the hot iron plate and thus cooled, while the Bunsen flame is, at the same time, removed from under the iron plate. The latter plate having become cooler, replace the aluminium strip on it, and then gradually heat up the iron plate from beneath by means of the Bunsen flame. As a result of this gradual heating, the aspect of the selenium layer on the aluminium changes; this layer changes from black to gray in appearance, and in the latter state it is sensitive to light. But to give the layer its maximum sensitiveness, several remeltings may be necessary, until a gray surface of a somewhat brownish tinge, quite devoid of glossy streaks, is produced. Nothing but an actual sight of the process of making a sensitive plate can give the reader a correct notion of the proper kind of surface. Assuming this surface produced by the gradual process of heating above referred to, the Bunsen flame is removed and the seleno-aluminium plate is allowed to cool on the iron plate. When it has cooled (after about ten minutes) it is taken and joined to a very fine platinum wire which is inserted through a fine hole previously bored through the uncoated portion of the aluminium plate; this platinum wire is tightly pinched to the plate so as to make a good electrical contact.

So far for the sensitive plate. The cell into which it is to be inserted is a very fine glass tube about $1\frac{1}{2}$ inches long, into which a platinum wire pinched to a clean plate of aluminium has been sealed; the size of this latter plate is immaterial—it may be a mere speck of the metal at the end of the platinum wire; it is the inactive plate of the cell. Into this glass tube, thus closed at one end, is inserted (by means of a pipette with a capillary stem) a quantity of pure acetone sufficient to occupy about one-fourth of the length of the tube; and then the sensitive plate is inserted until its sensitive extremity is very nearly in contact with the inactive plate, the whole of the sensitized part of the plate being covered by the acetone.

The platinum wire of the sensitive plate which now projects through the open end of the cell must be sealed into the tube, the end of the tube being, of course, completely closed by the sealing. Much practice is here necessary, to prevent the vapor of

* Communicated by the Author.

the acetone from bursting the heated end of the tube; but the process becomes easy enough with practice.

The cell is now made, and if its poles are connected with those of an electrometer, and light is allowed to fall on the sensitive plate, an electro-motive force will be indicated.

Shortly after the cell has been made, it is wonderfully quick in its response to changes of the incident light—almost instantaneous, in fact; but after about twenty-four hours, it becomes slower in its response. The cause of this is not yet quite known; but it has been found that a constant régime can be produced and kept up for months by—

(a) using perfectly pure acetone.

(b) using perfectly pure selenium.

(c) turning the cell upside down when it is not required for use, and thoroughly shaking the liquid away from the plates.

The complete and permanent elimination of sluggishness from the cell is under consideration at present.

As regards the magnitude of the electro-motive forces produced, it may be said that ordinary diffused daylight falling on the sensitive plate will give an E. M. F. of about $\frac{1}{2}$ volt, which is surprisingly great. A candle at a distance of 7 feet will give about $\frac{1}{30}$ volt.

Light of all refrangibilities from red to violet is effective—and this fact distinguishes this cell from every other known photo-electric cell—the maximum effect being produced by the yellow rays; but there is not very much difference between the effects of the various parts of the spectrum.

By putting a number of these cells in series, the effect is multiplied by the number employed; thus, 10 cells in series will give ten times the E. M. F. of 1 cell.

Hence, for stellar observations the cells should be made as small as possible, and cells much smaller than the typical one above described have been made.

Does anything depend on the size of the sensitive plate? It would appear that nothing depends on the size, and that therefore a mere pin point of sensitive surface is as effective as a square centimeter. Perhaps this is so, but it has been found that the maximum E. M. F. is never given when the sensitive surface is as small as a large pin head. For stellar observations this is most unfortunate; but it is highly probable that the result is due to the large size and capacity of the electrometers at present at our disposal. There is good reason to think that, with an extremely small electrometer, the pin-head plates will give as good results as the larger ones. Certainly, with a common quadrant electrometer a sensitive surface 6 millimeters long and 2 millimeters wide gives as good a result as a surface ten times as large. For the light of the moon there is no difficulty in making batteries of photo-cells containing 10 or 20 cells.

With Mr. Monck's refracting telescope, the image of Mars would take, perhaps, three cells, and an unmistakable E. M. F. should be produced. Jupiter would take more; but it would be difficult to cover completely the sensitive surfaces of two cells with the light of Vega. (The whole of the sensitive surface of every kind of photo-cell must be covered by the incident light to obtain the full effect.)

The best existing form of electrometer is Clifton's form of Thomson's Quadrant. Some very slight improvements in this instrument would render it fairly fit for photo-electric observations in an observatory. When working well (well insulated, and preserved from draughts of air) it will give about 200 half millimeters deflection on a scale distant 1 meter from the mirror for 1 volt. Hence, a candle at 7 feet from one photo-cell has been found to give about seven divisions deflection. Thus it is very easy to get results from moonlight; and, with a clear sky and the absence of air currents, the light of a planet should be easily measurable.

For a given source of light, the E. M. F. developed in a photo-cell varies inversely as the distance of the light from the cell.

Instead of an electrometer, a high resistance reflecting galvanometer could be used with photo-cells; but the former instrument is far preferable, because it is not advisable to allow currents to circulate in the cell. A galvanometer and a condenser (the latter charged by the cell while light falls on it, and then suddenly discharged through the galvanometer) give enormous deflections with moonlight; but this method is objectionable.

So far as is known at present, these cells will stand any amount of exposure to light without deterioration—provided that they are always employed with an electrometer, *i. e.*, open-circuited.

Mr. Monck and Professor Dixon have, I believe, succeeded in obtaining results from the light of Mars under most unfavorable atmospheric conditions. I remained in Dublin for a week in the beginning of August to try the cells with the stars; but during this time not a single opportunity occurred, the sky being heavily clouded every night.

When a photo-battery has been used with a strong light, such as that of the Moon, the deflection on the electrometer scale takes some time to disappear when the light has been shut off. This deflection can, however, be very quickly got rid of without injury to the battery, by an instantaneous connection of the battery with a Daniell cell whose zinc pole is for the moment connected with the sensitive pole of the battery, the copper being connected with the insensitive pole and with earth.

ROYAL ENGINEERING COLLEGE,
Cooper's Hill, England.

THE PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN EXHIBITION.

ON SATURDAY, September 24th, the galleries of the Royal Society of Artists in Water-Colors, in Pall Mall, London, were opened for the purpose of a private press view of the above exhibition. A *conversazione* in the evening followed, and on Monday morning, the 26th, at 10 o'clock, the doors were opened to the general public.

At the *conversazione* the guests were received by the President, Capt. Abney, and the Hon. Secretary, Mr. Chapman Jones.

The judges of the competition were W. E. Debenham, W. England, F. P. Cembrano, J. Traill Taylor and F. Hollyer, Capt. Abney and Andrew Pringle acting as scientific experts.

The list of prizes was as follows: J. E. Austin, Frame 184, "Worn Out"; Autotype Company, Frame 418, Autogravure; W. Bedford, Frame 67, "Salhouse Dyke"; F. Boissonnas, Frame 404, Tele-Photographic Work; O. R. Dresser, Frame 140, "Aylesford"; Elliott and Son, Frame 250, Enlargement; Col. J. Gale, Frames 79-85, Seven Landscapes; Karl Greger, Frame 5, Six Landscapes; Edgar G. Lee, Frame 637, Lantern Slides; Mrs. Main, Frame 212, Frost and Sunshine Studies; F. Muller, Frame 146, Portrait; J. Harold Roller, Frame 229, At-Home Portraiture; Henry Stevens, Frame 201, "Meadow Sweet"; Taylor, Taylor & Hobson, Frame 692, Apparatus; Wm. Warnerke, Frame 243, Portrait; B. Gay Williamson, Jr., Frames 50-3, Four Landscapes; H. Yeo, Frames 143-4, Portraits of a Child.

The lantern demonstrations were largely attended and were excellent in character. Altogether, the threatened opposition exhibition certainly did not interfere with this year's Pall Mall one.

All communications for the columns of the BULLETIN should reach us on Monday preceding the day of issue, to insure their publication at that time.

THE COLOR SCREEN IN LANDSCAPE PHOTOGRAPHY.

To the Editors of the BULLETIN :

In reference to the article "The Color Screen in Landscape Photography," by Charles L. Mitchell, M.D., No. 16, Vol. 23, I think I can suggest a simpler mode of making the screen.

The varnish he used I cannot make dry out perfectly, the surface produced having a ground-glass appearance. I cut out a square rim of tin foil the size of the glass and one-eighth of an inch to inner margin (one or more thicknesses of foil may be used according to the depth of color desired), placed it on one of the glasses, poured some varnish within, laid the other glass gently down upon it, clamped the two firmly together with four photo clips (one at each edge), set away in a draught, and within twelve hours the varnish had dried hard enough on the border to enable one to paste the paper rim around, when, of course, the screen was ready for use.

Air bubbles may form on placing the second glass on the varnish, but if care is taken they may be avoided; and if a few small ones do appear, they will collect into one shortly and lodge on the edge of the screen, where they will be out of the way of the lens.

Yours respectfully,

J. P. CHURCHILL.

ANOTHER ANSWER TO "A TOUCHING APPEAL."

WE beg to acknowledge the receipt of \$1.00 from Charles W. Thayer, of Collinsville, Conn., for the H. H. Snelling Fund.

Winter is approaching and Mr. Snelling is still in sore need of many such dollars. Can we not obtain many more from the readers of the BULLETIN. Forego some little pleasure and help a blind and aged brother and fellow-craftsman. Lighten a little the burden of his remaining days.

OUR ILLUSTRATION.

SOME time ago we had the pleasure of looking over a number of handsome studies of dogs, made by Pach Brothers, of New York, and in the course of the inspection we noted the unusually fine specimen that forms the frontispiece of this issue of the BULLETIN. It requires an uncommon amount of patience and skill to obtain good pictures of these animals, as anyone who has tried it will testify. How well our good friends Messrs. Pach have succeeded with the handsome Gordon setter of our illustration we leave our readers to judge for themselves. We think the picture one of the best productions of its kind we have seen for many years. The whole series of studies are exceedingly fine, and many of them are equally as good as pictures as the one we have chosen, although not as well suited for reproduction. If any of our readers love dogs, they should see Pach Brothers' collection, and they will be delighted.

SON—One of those European doctors has discovered that the older a man gets, the smaller his brain becomes.

FATHER—Ah, that accounts for it.

SON—Accounts for what?

FATHER—For your knowing so much more than I do about everything.

ANTHONY'S Photographic Bulletin.

EDITED BY

Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.,
and a corps of practical assistants.

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Advertisements should reach us not later than the Saturday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, six, twelve or twenty-four issues.

E. & H. T. ANTHONY & CO., Publishers.

AMERICAN INSTITUTE—PHOTOGRAPHIC SECTION.

THE regular monthly meeting of this section was held at 113 West 38th street, on Tuesday, October 4th, MR. HENRY J. NEWTON, presiding.

The report on communications was the first business of the evening. The Secretary announced the receipt of a batch of circulars referring to an International Photographic Exchange, the headquarters of which are at Helsingfors, Finland. Photographers are invited to choose one or more of their best negatives, print copies from them, and send these to the exchange. In return, a number of prints, all different, but of as nearly as possible the same value, and taken in all parts of the world, will be mailed by the promoters of the Exchange.

Copies of the rules of the International Union of Photography founded at the International Congress, which met at Brussels last year, were also distributed. The object of this society is the dissemination of ideas and the making of constant efforts to establish

everywhere unity of action in regard to photography, so that facilities for the study and utilization of any new facts may be afforded to all. The first meeting was held at Antwerp last August.

The Secretary also acknowledged the receipt of the *Journal* of the Photographic Society of Great Britain, and of copies of the *Eye and Times*. A vote of thanks was accorded the donors of these periodicals.

On behalf of the Executive Committee Mr. O. G. Mason promised a good exhibition of lantern slides for the November meeting, and announced that Mr. Newton would read a paper in December, on "The Lantern Slide and Its Relation to Art."

Mr. F. J. Harrison exhibited the Lavette mailing envelope, an extremely convenient way of avoiding damage to prints. Stout manilla paper with gummed edges forms the basis of the envelope, two pieces of cardboard protecting the print and keeping the whole thing rigid.

The Perfection Trimming Board excited interest, being an instrument for trimming all sizes of paper with one cutting shape. By its use perfect rectangularity is assured and the cutting is rapid and easy. Under a piece of glass, lines, representing the various sizes in common use, are printed. Two sides of this glass are bounded by strips of wood at right angles. Moving over this glass is a rectangular piece of plate glass. This being pushed against the right angle, the prints are slipped under and readily and accurately trimmed.

Another novelty shown was the new 5 x 7 folding Hawkeye. This is a very compact box, possessing a double swing back and rising front. The lens is fitted with a Bausch & Lomb diaphragm shutter, and the whole box forms an ideal hand camera. Plates, cut films or roll films may be used as desired, the transition from one to the other being simply obtained.

One of Dallmeyer's new tele-photographic lenses was also exhibited along with several prints, comparing it with lenses of the rapid rectilinear type. The lens with its aluminium mounting and its simplicity of action was greatly admired. A rough outline of its construction and of the method of using it was given by Mr. Harrison.

A discussion on aristotype papers followed, in the course of which it was repeatedly mentioned that gelatine aristotype papers were subject to considerable change. Mr. Van Brunt had found that by toning and fixing separately and washing well some would keep

indefinitely, while others faded. This was the experience of others of the audience. Mr. Harrison spoke at some length on the merits of collodion aristo paper, claiming for it permanence and capacity for reproducing the finest detail. He said that in the manufacture of "Aristo" paper only the very finest possible paper was used. When completed, a print on this paper could be handled with impunity and the photographer could have perfect confidence in its permanency. He claimed that the prevalence of poor photographs was largely due to the poor paper used in the making of prints, the worker being led astray by the apparent simplicity of working of some papers.

Mr. Newton remarked that where poor paper was used in the production of albumen paper, prints would turn yellow and that the same would sometimes occur on good paper. He had seen a variety of imported papers and a variety of prints. Some of these had a substratum protecting the gelatine from contact with the paper. One of these papers he had found to yield very beautiful prints. On some gelatine papers he had seen no trace of yellowing of the whites, while on others he had got a "morning dawn."

Continuing, Mr. Newton said that the quality of the paper coated was the factor to be considered. There was once a glazed paper used for making albumen paper which gave beautiful prints. He said that he had rarely found an albumen paper that did not contain gelatine. Gelatine is soluble in water and is not coagulated when brought in contact with nitrate of silver. Albumen is coagulated by silver and is retained on the paper. Years ago in experimenting on albumen papers Mr. Newton made a gelatine solution which would dry insoluble. He first found the specific gravity of ordinary albumen, and then made up a solution of gelatine to which while hot he added a solution of alum and salt. This he dissolved in acetic acid and made of the same density as albumen. This dried insoluble.

Mr. O. G. Mason had had some trouble with albumen paper, and passed around a print showing many whitish spots. He had silvered and otherwise treated the paper in accordance with his usual methods, and had for some time been unable to cure the evil. He had overcome the trouble finally by gently heating the paper after fuming.

The attention of the meeting was here called to a challenge issued by Abe Lizzard in Anthony's *BULLETIN* of September 24th. This arose out of an exhibition of slides held last

session where wet and dry plates were exhibited side by side, the unanimous opinion then being that the dry plate was superior for this work. Abe Lizzard offers to send a negative and slide from same, and presumably expects to find the wet-plate slide proved the superior. The following resolution was carried, referring to Abe Lizzard's letter: "That the challenge issued by Abe Lizzard be accepted by the Photographic Section of the American Institute, and that gentleman be invited to take the steps necessary for the fulfillment of his challenge."

The meeting adjourned at 10 P. M.

ORANGE CAMERA CLUB.

THE Orange Music Hall was filled with an enthusiastic audience on Thursday, October 13th, the attraction being an exhibition of lantern slides by the Orange Camera Club. This club meets on the 5th and 20th of each month at 275 Main street, and has a large working membership. The efforts of the lantern slide committee resulted in an excellent exhibition. A capital musical programme added to the enjoyment of the evening.

A series of Scotch and English views by E. H. Graves and V. L. Davey were very interesting, the slide of Ann Hathaway's cottage, at Stratford, being a beautiful rendering of a picturesque subject. Views of Loch Katrine, of Edinburgh Castle, Conway Castle, and bits of Welsh scenery, were much admired. W. H. Cheney contributed some scenes in Bermuda, and C. G. Hine's cloud effects were very good. Views nearer home, in the Catskills and along the Hudson, by C. R. Mann, were shown and duly appreciated.

Mr. V. L. Davey announced the slides, giving the descriptions in an easy and interesting manner. The musical programme included music by the John Markwith orchestra, zither and guitar by P. J. Baer and J. V. Valentine, and "Italian Boat Song" and "The Golden Dollars" by George H. Simonds.

The evening was a red letter one in the history of the camera club and will do much towards enlisting the interest and sympathies of the residents in the neighborhood in the work of the club.

THE *Chemist and Druggist*, in commenting upon the working properties of amidol, says that the first point to be noticed is that development takes place with amazing rapidity—say, in as many seconds as it takes minutes with pyrogallie acid.

[From the Canadian Photographic Journal.]

PRINTING AND TONING ALBUMEN PAPER.*

BY C. A. LEE.

THIS is a subject upon which there has been a great deal said and written, and there is still much more of a practical nature to be said. * * * Now, Mr. President, I will give this convention assembled my mode of working albumen paper. In the first place, choose a brand of paper and stick to it until you can get good results; keep your paper and chemicals working in harmony; keep your paper in the proper condition for sensitizing, just damp enough to prevent it from cracking while handling, float two minutes on a bath containing water and silver nitrate (65 hydrometer test) made slightly alkaline by the addition of a small lump of sodium carbonate, which will form a precipitate, and so long as that precipitate is in the bottom of your bottle, you can be sure your solution is alkaline. Now that you have your paper sensitized, dry with moderate heat and fume thirty (30) minutes; do not place the ammonia directly under the paper, but a little to one side, so the vapor will not come in contact with the paper at any direct point, but will spread evenly throughout the box and your paper will be evenly fumed. Cut sizes required and it is ready for the frames. Now, sir, we will take a cabinet head of a lady in light draperies. To vignette this, we will put a piece of wood 1 inch thick all round ordinary printing frame. Cut a hole in the card, notch it and spread it to the size required. Print in a soft light and the result is you will get a print with a soft, even blend almost to the edge, but put the card on the frame, and put in a strong light, and you get a sawed-off, ungainly looking affair. Now, we will tone this print. Any of the many formulas published will give good results, but I use a very simple tone: 1 grain chloride gold, 10 ounces water, neutralize with bi-carbonate soda and add a little soda carbonate (it will prevent the bi-carbonate soda from attacking the albumen surface, but be sure and not add too much; if you do, you will stop the process of toning). Tone until the high lights assume a pearly white, then stop. Put the print in a weak solution of salt. Fix in hypo, 1 ounce to 10 of water and keep the prints in motion.

* * * * *

After your prints are fixed do not pour off

* Read before the P. A. C. Convention.

the hypo, but add water to the hypo and weaken it, pour off half the bulk and add more water, keeping them face down all the while, and if the temperature of the water has not been too low, you can look for blisters, but you will not find any. Keep your sensitizing bath, tone and hypo about the same alkalinity. Give your prints a good liberal washing and they are ready for the card.

MRS. BLOOBUMPER (after an unsuccessful search for a certain book)—I'm satisfied that we shall not find it.

BLOOBUMPER—I don't think we shall find it either, but I'm not satisfied.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. Correspondents will please remember this. No attention will be paid to anonymous communications.

Q.—R. H. M. writes: Please give in next BULLETIN the best formula for combined eikonogen and hydroquinone developer for portrait work—in two stock solutions. If they are better than pyro I want to use them.

A.—We have found the following a very satisfactory formula to use:

No. 1.

| | |
|---------------------------|-------------|
| Distilled water..... | 20 ounces. |
| Sulphite of soda crystals | 4 “ |
| Eikonogen | 330 grains. |
| Hydroquinone | 160 “ |
| Water to make up to.... | 32 ounces. |

No. 2.

| | |
|----------------------------|------------|
| Distilled water..... | 20 ounces. |
| Carbonate of potash..... | 2 “ |
| Carbonate of soda crystals | 2 “ |
| Water to make up..... | 32 “ |

For portraits, take 1 ounce of No. 1, 1 ounce of No. 2, and 4 ounces of water. The temperature of the developer should not vary much between the limits of 65 and 75 degrees Fahr. The mixed developer, after using, can be kept in a tightly stoppered bottle for future use.

Q.—F. P. C. writes: Will you kindly give me, through “What Our Friends Would Like to Know,” the correct formula for intensifying wet plates by what is known as the copper and silver method, and how to manipulate same?

A.—We believe the following to be what you have asked for:

No. 1.

Bromide of potassium.... $\frac{1}{2}$ ounce.
Water..... 4 ounces.

No. 2.

Sulphate of copper..... $\frac{1}{2}$ ounce.
Water..... 4 ounces.

No. 3.

Nitrate of silver..... 120 grains.
Water 4 ounces.

Mix equal parts of solutions 1 and 2, and pour on the film. When it becomes perfectly whitened, immerse in No. 3 until it turns completely black. Wash thoroughly.

Q.—F. W. writes: If you had a darkroom 8 x 10 feet, and wished to construct a lantern for same regardless of expense, how would you proceed? Give dimensions, also combination of screen.

A.—The conditions you have given us are hardly explicit enough, and, even if they were, it must be borne in mind that individuals have different ideas and prejudices which frequently do not coincide with those of their fellow-workers. Personally, we should prefer, if possible, to have an incandescent light of about 16 candle-power placed outside of the darkroom, with the controlling switch inside. The screen we would construct with an aperture of 8 x 10 inches, and place it so that the light would come from the side and fall upon the tray rather than from the front. Make the screen to slide, and provide it with three apertures of the size mentioned; glaze one with a yellow glass, another with a deep red glass, and the third with a white one. Of course, these suggestions can be elaborated to any desired extent, but this we must leave to you.

Views Caught with the Drop Shutter.

We have received from S. H. SMITH & Co., photographic merchants, 80 Bay street, Toronto, Ontario, Canada, a copy of their new illustrated catalogue. In it, we note, among the many good things, a number of our publishers' specialties, including the American Aristo paper. The book is both neatly printed and well illustrated, and we doubt not that it will be in demand among their numerous Canadian clientèle.

THE photographic establishment of ALFRED S. CAMPBELL, of Elizabeth, N. J., was destroyed by fire on the evening of September 30th. It was the largest of its kind in the country, the photographic cards given away by cigarette manufacturers being made there. During the progress of the fire a fireman, named Van Vleck, was buried under falling walls and seriously injured. The origin of the fire is not definitely settled, although incendiarianism is suspected.

AMONG recent New York companies which have lately been incorporated, we note the LITHOGRAPHIC ZINC PLATE AND TRANSFER PAPER COMPANY of NEW YORK CITY. Capital stock, \$30,000. Directors, James W. S. Langerman, Charles Mann and Albert James Thorne.

THE PHOTO-MATERIALS COMPANY, of Rochester, has just been incorporated, and have bought out the plant, business and patents of the CORONA COMPANY. They purpose manufacturing cameras and photographic specialties under patents secured by G. D. Milburn.

TABLE OF CONTENTS.

| | PAGE | | PAGE |
|---|------|--|------|
| AMERICAN INSTITUTE—PHOTOGRAPHIC SECTION..... | 637 | PRACTICAL PHOTOMICROGRAPHY, by Mr. A. F. Stanley Kent, M. A., F. G. S..... | 621 |
| ANOTHER ANSWER TO "A TOUCHING APPEAL"..... | 636 | PRINTING AND TONING ALBUMEN PAPER, by C. A. Lee..... | 639 |
| A TERRIBLE MISTAKE, by Thomas B. Waight..... | 631 | THE COLOR SCREEN IN LANDSCAPE PHOTOGRAPHY, by F. P. Churchill... | 636 |
| A WORD IN FAVOR OF THE CARBON PROCESS, by Prof. W. K. Burton..... | 620 | THE HELIOCHROMOSCOPE, by F. E. Ives... | 628 |
| EDITORIAL NOTES..... | 611 | THE NEW YORK CAMERA CLUB'S COLUMBIAN EXCURSION..... | 609 |
| ENGLISH NOTES, by Talbot Archer..... | 614 | THE FALL MALL EXHIBITION..... | 632 |
| ON THE USE OF PHOTOGRAPHS IN THE PREPARATION OF PERSPECTIVE DRAWINGS, by Prof. F. Schumacher..... | 616 | THE PHOTO-ELECTRIC CELLS, by G. M. Alvin..... | 633 |
| OPTICAL GLASS, by J. K. Gots..... | 624 | THE PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN EXHIBITION..... | 635 |
| ORANGE CAMERA CLUB..... | 638 | VIEWS CAUGHT WITH THE DROP SHUTTER..... | 640 |
| OUR ILLUSTRATION..... | 636 | WHAT OUR FRIENDS WOULD LIKE TO KNOW..... | 639 |
| PHOTOGRAPHIC LIMITS, by Catherine Wood Barnes..... | 616 | | |



NEGATIVE BY W. A. CROFT.

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ORTHOCHROMATIC STUDY.

ANTHONY'S Photographic Bulletin.

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THE HAND CAMERA AND ITS ABUSE.

THE press-the-button photographer has considerable food for reflection this month. The summer has seen him, camera in hand, recklessly snapping the shutter in all sorts of inaccessible places, and the confidence he has had in his results is more than painfully amusing. The many rolls of film have been sent to the dealer for development and finishing off, the end being that a very disgusted individual finds himself the recipient of a very small percentage of poor prints, with a large bill to pay for the production thereof. The camera, or more often the film, is blamed, the operator rarely realizing that while photography is a wonderful art-science, it cannot be expected to supply brains and common sense to its votaries.

Large batches of such developed films have reached us, accompanied in most instances by long letters of complaint, and often by the camera itself, for examination. In ninety-nine out of every hundred such cases, the fault has not been that of camera or film. The blame must, therefore, lie with the user of the instrument. Taking one such batch, we find, in some of the films, just a faint glimpse of a shelf and a clock; on another, a black patch representing a window; on another, a ghostly outline of trees; on the majority, nothing distinctly visible. All that has been written on photography has availed nothing with the producer of these results, and why? Because all that which has been written has never been read. The camera and films have been purchased, the instruction imparted by the vendor, carelessly listened to, forgotten, and all common-sense principles as to the lighting of the subject violated. And this disregard of the first principles of snap-shot photography is on the increase, judging by the quantity of useless matter produced.

The remedy for this is, obviously, education, obtained by careful perusal of photographic literature. Such education becoming general, the mechanical

photographer will cease to exist, for the impossibility of an outsider to do justice to the work will be realized. And, more important still, the truly remarkable efforts put forth by these very-much amateurs will be gently restrained; no more instantaneous shots at picnic parties in shady glens, or lovers in cosy nooks under piazzas, will be attempted. The implicit trust that the mechanical photographer has in his instrument is really pitiful. It is to him the only factor in the work. But it is a factor concerning the properties of which he is, like his subjects, entirely in the dark.

There can be no doubt that the number of users of the hand camera is increasing at an enormous rate. The portability, compactness and general simplicity of action of the instrument commend it to all. But of all photographic instruments, it is the one calling for the exercise of judicious self-restraint and careful handling. The user must remember that an instantaneous picture is usually an under-exposed one, and that it is practically useless to attempt to photograph a poorly lighted object unless an exposure of one-half to one second can be given. The users of tripod cameras seldom expose with the shutter unless forced to do so, and the percentage of results ranks considerably higher than that of those of the hand camera. The users of the latter instrument rarely, indeed, use the time attachment, and, therefore, must depend on the extreme rapidity of their plates or films and on the choosing of well-lighted subjects. In most of the cheaper hand cameras the lenses are perforce diaphragmed down so as to give good depth of focus, for the focusing is done chiefly by a graduated scale. The lens will work usually about right if the light is really good. Under any other circumstances the negative will be poor and weak.

Now, the number of cheap hand cameras sold is very largely in excess of the expensive ones. With these cheap cameras good instantaneous pictures can only be obtained when working under the best possible conditions. This must be borne in mind in purchasing and in using them. Though it cost a pang to lose a good subject, it should be allowed to go, for it is simply throwing away material and labor to expend a plate upon it.

To users of films we would remark that very careful manipulation is required. Many, not well acquainted with the intricacies of their roll holders, partially fog the film by prolonged exposure to the red lamp. No lamp is perfect, and the less the film is exposed to any light the better. Then, the same cause of fogging must be avoided when cutting up the film for development. A glance at the back of the film, this being held so as to reflect the light, will reveal at once the position of the punctures. A long pair of scissors does the rest. Frilling round the edge from handling is a source of great annoyance; but care in handling and the confining of the attention to one film at a time will obviate this. All films should be soaked in water containing alcohol and glycerine before being allowed to dry, and should be stored face to face between cardboard. A film once cracked is like a plate broken.

The cut films do not receive the share of patronage they deserve. They are rigid, and have all the qualities of the best plates, and are easier to handle than the roll film. But the greater portability of this latter and its easy exchange will ever entitle it to favor, though these are the qualities rendering its employment dangerous because of its facility. In the abundance of material, recklessness and abuse arise, and the percentage of good results lowers.

The trend of our remarks may be briefly summarized. The amateur to obtain good results must educate himself by proper study of the literature of his subject, becoming thus familiar with the limitations of his instrument. There is altogether too much hap-hazard work, too much reliance on a piece of glass and a wooden box. The literature is at hand; the education is easy and more than interesting; the reward is great.

Speaking before the North Middlesex Society on "Photography by Rule," Mr. Thomas Bedding remarks: "The best amateur work of to-day is undoubtedly as good as, and possibly better than, the work of ten or twelve years ago; but the average strikes me as lower, an opinion which I base on a comparison of the work shown on the walls of exhibitions during that time. Probably the seductive simplicity of the hand camera and the fascinating facility of shutter work have also operated in the same direction," towards the production of the admittedly low average of quality of modern amateur work.

The low average is undoubtedly due to the use of the hand camera by an enormous number of so-called amateurs who are absolutely ignorant of the first principles of photography, without which knowledge a high average is unattainable.

EDITORIAL NOTES.

A most interesting paper was recently read before the Franklin Institute, of Philadelphia, by Louis E. Levy, on "A New Process of Photo-Intaglio Engraving," which it is claimed reduces this method of engraving almost to a simple mechanical one. Another paper was at the same time read by W. N. Jennings on "Some New Lightning Photographs."

A NEW method of timing the speed of an instantaneous shutter has lately been suggested by Mr. J. B. Bent, of Oldham, who employs a silvered bulb attached to the end of a cord 2 feet $5\frac{1}{2}$ inches in length. If this be employed as a pendulum and the bulb be pulled sideways, a distance of 2 feet $5\frac{1}{2}$ inches from the position the wire will assume when at rest, and allowed to swing, the velocity of the bulb will be 4 feet per second. From a plate exposed under these conditions the speed of the shutter can be readily calculated.

WE learn of the institution of an annual competition for the members of the New York Society of Amateur Photographers. The first exhibition will be held at the rooms of the society on March 15th. For particulars, see notice on another page.

A NEW instrument for measuring the curves of lenses has recently been designed by Professor Abbé for the Zeiss Company. It is said to be capable of measuring the $\frac{1}{25000}$ th part of an inch.

AMONG the exhibits at the Chicago Exposition will be what is said to be the first photograph that was ever taken in America. The picture is of Major Gibbs, and was taken by him on December 15, 1854.

WE note, with pleasure, the recent formation and prosperous growth of "The Camera Club," of Jersey City. Its president is Mr. Joseph Cottier, and its secretary, Mr. A. B. Guilford.

A PHOTOGRAPH can be rendered luminous in the dark by first sprinkling luminous powder on a white mount freshly covered with paste. The silver print is then made as transparent as possible with castor oil, and after wiping away the surplus it is placed upon the mount in the ordinary manner. By exposure to daylight a luminous positive is obtained.

M. ROSSEL has devised a method of producing beautiful blue transparencies by the use of ordinary cyanotype paper. The picture is printed until very plainly visible. It is then thoroughly washed and immersed for fifteen minutes in a 10 per cent. solution of bichromate of potash, after which it is again thoroughly washed, allowed to dry, and rendered transparent by coating with warm paraffine. The print is then placed between two glass plates and mounted in the usual way.

WE had the pleasure, recently, of receiving a call from Mr. Fred. E. Ives, the inventor of the now famous heliochromoscope. Mr. Ives' invention bids fair to become a popular one and certainly reproduces with startling exactness Nature's wondrous and beautiful coloring.

WE would acknowledge the receipt of two portraits from Mr. Bassett, of Harrison, New Jersey, both of which show care in posing and excellent lighting effects.

THE Woodstock Camera Club has recently been organized in Woodstock, Westchester County, New York, with twelve charter members. There seems to be ample field for a club in that locality.

THE English customs officers are in the future to be supplied with ruby-colored lights for the examination of imported cases of photographic plates and films in a dark chamber.

A RECENT interesting application of photography was the photographing of Professor Bell, the inventor of the telephone, while in the act of conversing, by its aid, with a friend of his in Chicago, distant nearly 1,000 miles.

THE first Lantern Slide Exhibition of the Portland Camera Club was given at the Art Rooms in that city on October 5th. Among the slides shown were a number from the Society of Amateur Photographers of New York City.

A SPECIMEN of the work of the No-Gold Toning Bath has been submitted to us by Mr. W. E. Hall, of Havens, Kansas, in the shape of two portraits taken by him, both of which are extremely creditable in every way.

THE New Jersey Division of the American League of Amateur Photographers was organized on October 8th with the following officers: *President*, Oscar S. Teale, of Plainfield; *First Vice-President*, Wm. A. Halsey, of Newark; *Second Vice-President*, A. J. Thomas, of Hoboken; *Treasurer and Secretary*, Dr. T. N. Harvey, of Orange.

THE first meeting of the Worcester Camera Club in its new quarters in the Walker Building was held on October 25th, and was largely attended. The

accommodations consist of a reading-room, printroom, darkroom, studio and a room for bromide enlarging.

THE Albany Camera Club held its first fall meeting on October 7th, and honored the return of its genial president, Mr. W. W. Byington, from his trip abroad by serving refreshments at the conclusion of the meeting.

THE Illinois Woman's Exposition Board has decided to represent those branches of industry in which women are employed, by large photographs, showing them in their workroom and at work, and for this purpose the various country clubs have been asked to contribute photographs of this character.

WE learn from Mrs. Fitzgibbon-Clark, of St. Louis, of the improvement in Mr. Snelling's health, and that there are strong hopes of his recovering the sight of one of his eyes. It is intended in such an event to obtain his admission into some home where he can comfortably pass the remainder of his days. He is very grateful for all the aid rendered him.

THE University of Pennsylvania Camera Club held its first regular meeting this year on October 24th, in the College Chapel. The meeting was well attended, and several new names were added to the list of club members.

AT a business meeting of the Photographic Section of the Brooklyn Institute the following officers were elected for the ensuing year. *President*, J. Foster Flag; *Vice-President*, G. A. Wundrum, and *Secretary*, Gould W. Hart. The section holds weekly meetings for technical work at its rooms in Montague street.

A NEW method of determining latitude and longitude has been invented by Professor George Fargis, in connection with his photo-chromograph for measuring star transits.

A MACHINE designed for use in electric-spark photography has recently been constructed, which renders it possible to photograph objects moving at the rate of 10,000 miles an hour. By a revolving mirror attachment it is possible to still further extend the limit to 180,000 miles per hour.

AT a regular meeting of the Minneapolis Camera Club, held October 13th, a series of fine Egyptian views taken by Mr. W. T. Rolph, and a number taken in the West Indies by Dr. F. N. White, were highly appreciated.

WE have received photographs of the recent eclipse of the sun from M. S. Lovell, Randolph, N. Y., and B. F. Joy, Ellsworth, Maine, both of which are excellent productions.

PROFESSOR E. E. BARNARD reports the discovery of a very faint comet on October 14th, by the aid of photography, at Lick Observatory, Mount Hamilton, Cal.

THE New Orleans Camera Club gave an exhibition of lantern slides at Tulane Hall on October 7th. Among those shown were a number of prize slides from the London competition in 1890.

At a meeting of the California Camera Club on October 4th, the president, Mr. H. B. Hosmer, was induced to withdraw his resignation. Mr. Andrew's resignation as secretary, on account of press of business, was accepted, and Mr. James Duffy was elected as his successor.

In the recent Mechanics' Exhibition in Boston, the amateur photographers were represented by an especially fine set of prints, mainly due to the Boston and Providence Camera Clubs.

We learn of a mechanical printing machine which is capable of turning out sixty prints a minute. The paper, which is of a special kind, is automatically fed by a roll, and is exposed by a shutter mechanism to the light for a few seconds, after which it is cut off the proper size and dropped into a drawer. From time to time the prints are taken out and developed. The results are said to be very satisfactory.

The annual meeting of the Baltimore Photographic Club was held on October 4th in its rooms at Madison and Entaw streets. The officers elected for the ensuing year were as follows: *President*, A. S. Murray; *Vice-President*, H. Stockbridge, Jr.; *Secretary*, Dr. F. M. Slothower; *Corresponding Secretary*, H. D. Williar; *Treasurer*, F. A. Noble.

LETTER FROM GERMANY.

BY DR. H. W. VOGEL.

Problems for Amateurs.—Photography with Aluminium.—The Brightness of Solar Light and Different Artificial Lights after Abney.—The Brightness of Illuminated Objects, after Kirschmann.

MEN of science have complained to me, that the invitation published by several journals, for participation by the amateur photographers in the solution of scientific problems, has not been accompanied so far by any desirable success. Particular mention is made, that more is expected from amateurs in the astronomical field, in lightning and cloud photography, etc., but, on the other hand, it is acknowledged that many treasures have been secured in the architectural branch and that we have to thank them for many interesting explanations about the utility of new apparatus, developers, etc. But the field of labor for the amateur cannot be restricted to certain limits. Many, on the contrary, are satisfied with the most simple apparatus, a plain drop shutter, or by simply using the lens cover. We know a party of high standing, who photographs in this way; the rest of the work he leaves to others. We also know some Alpine heroes, who have the craze for mountain scenery. Everything except mountains is indifferent to them, although they have the finest opportunity for making cloud, lightning—yes! even cave—studies, with and without magnesium light.

In the multifariousness of photography there is evidently a certain charm, and we believe that those who do not restrict themselves to one branch only will be richly recompensed by the results.

Of course, there are certain things which cannot be accomplished at once. I myself have been obliged to go more than a dozen times after a view, to obtain certain light effects, before I succeeded in fixing the desired picture upon the plate. I have never been able, for instance, to make a good rainbow picture,

although others have succeeded in doing so. This should be an inducement to try again. I also was never so fortunate to make such an extremely remarkable lightning picture as that of Professor H. Kayser four years ago, which was really a problem to the scientific world and whose repetition would be decidedly meritorious. But such views require particularly favorable circumstances; one meets them accidentally, the other looks in vain for them.

It is similar with interesting cloud formation, and a greater number of amateurs should pay proper attention to such phenomena.

Photography, with aluminium powder in place of the magnesium light, about which I reported to you during the last season, by reason of Glasenapp's experiments, seems to excite a greater attention. That certain mixtures are just as actinic as magnesium mixtures has been proven by Glasenapp. Villon points particularly to the fact that the cost price of aluminium is only one-third of that of magnesium. To be sure, aluminium burns with more difficulty, and an aluminium ribbon can only be burned in oxygen, but it has the advantage of producing less fumes than magnesium.

Villon gives a number of formulas for flash powders.

I.

| | |
|-------------------------|-----------|
| Chlorate of potash..... | 20 parts. |
| Aluminium powder..... | 8 " |
| Sugar | 2 " |

II.

| | |
|----------------------------|-----------|
| Chlorate of potash | 24 parts. |
| Nitrate of potash | 5 " |
| Sulphide of antimony | 4 " |
| Aluminium powder | 10 " |

III.

| | |
|------------------------------------|-----------|
| Chlorate of potash | 25 parts. |
| Yellow prussiate of potassium..... | 3 " |
| Sugar | 2 " |
| Aluminium | 10 " |

He says that aluminium powder he has also blown through a flame, but it can only be done with the aid of oxygen. For this, Villon does not take pure aluminium powder, but a mixture consisting of—

| | |
|--------------------------|------------|
| Aluminium | 100 parts. |
| Lycopodium..... | 25 " |
| Nitrate of ammonium..... | 5 " |

Whether this mixture has better action than the one not blown through the flame I doubt very much. The great defect of this blow-light is, that part of the powder passes always unconsumed through the flame. This defect can be avoided only by application of a very fine powder. It is, therefore, advisable to sift the powder and thus obtain a finer article.

Villon produces, not only white, but also colored, flames, by mixing with the aluminium, strontium, barium, sodium, copper, etc.

He recommends the following formulas—

A.—RED FLAME.

I.

| | |
|-----------------------------|------------|
| Aluminium powder | 100 parts. |
| Chlorate of strontium | 10 " |
| Lycopodium..... | 25 " |
| Nitrate of ammonium..... | 5 " |

II.

| | |
|---------------------------|------------|
| Aluminium powder | 100 parts. |
| Oxalate of strontium..... | 12 " |
| Lycopodium..... | 25 " |
| Nitrate of ammonium..... | 5 " |

B.—GREEN FLAME.

| | |
|--------------------------|------------|
| Aluminium powder..... | 100 parts. |
| Lycopodium..... | 20 " |
| Nitrate of ammonium..... | 5 " |
| Oxalate of barium..... | 10 " |
| Chlorate of barium..... | 2 " |

C.—YELLOW FLAME.

| | |
|--------------------------|------------|
| Aluminium powder..... | 100 parts. |
| Lycopodium..... | 20 " |
| Nitrate of ammonium..... | 5 " |
| Oxalate of sodium..... | 12 " |

In the application of A I and B, I would recommend some care on account of the chlorate which the mixture contains.

For years we have attempted the measurement of the strength of our light sources—natural as well as artificial—and also the measurement of the brightness of bodies to be photographed, to determine thereby the time of exposure.

The results, which are published from time to time, vary considerably sometimes, which is not to be wondered at, when we consider the changing transparency of our atmosphere. Abney determined lately the brightness of the solar light, and obtained the following figures :

| | |
|--|----------------|
| At meridian | 5,600 candles. |
| 30 degrees above the horizon..... | 4,700 " |
| 20 " " " | 3,300 " |
| 10 " " " | 2,000 " |
| 8 degrees 30 minutes, above the horizon..... | 1,400 " |
| Shortly before sunset | 140 " |

The photographic intensity of the light varies, however, in the following manner :

| | |
|--|------------------|
| At meridian..... | 120,000 candles. |
| 30 degrees above the horizon..... | 72,000 " |
| 20 " " " | 42,000 " |
| 10 " " " | 9,000 " |
| 8 degrees 30 minutes, above the horizon..... | 5,000 " |
| At sunset | 117 " |

The photographic utility of solar light decreases, therefore, much quicker than the reduction of optical values, and shortly before sunset the former is nearly equal to *nil*.

Bunsen and Roscoe placed it equal to *nil*. The reason for this difference is, that the latter have measured with photographically less sensitive bodies than Abney.

These figures change considerably with the vapor in the atmosphere, as demonstrated by my examinations about the color brightness of the atmosphere. That the light of the setting sun can be considerably stronger than $1\frac{1}{2}$

candles is shown by the fact that, with a less sensitive collodion plate, I was enabled to take a picture of the setting sun.

Abney experimented, also, with the application of artificial light for the production of prints. He found that an exposure of from fifty to sixty seconds in direct sunlight is sufficient to obtain a platinum print. This is in a light of 120,000 candles, while in gaslight of 100 candles an exposure of twenty hours was required.

Abney informs us further, that 0.063 gram magnesium has photographically the same effect as 23 standard candles burnt for one minute; and to obtain a print, 0.31 gram magnesium was required, which was burnt at a foot distance from the negative.

These figures cannot be accepted generally. Experiments here have proven, that, for instance, three magnesium wires, burnt together and in close proximity to each other, gave by no means the triple light result of a single wire; further, that by burning magnesium powder in the flame the light intensity was by no means increased by the quantity. Schirm never takes more than 5 centigrams of magnesium powder, and if the quantity of light is to be increased he will take more lamps. For groups he uses about a dozen blow-lamps.

The light quantity, for example, the time of exposure for photographic views, has always to depend upon the brightness of the object. Our own eyes tell us that the dark paneled renaissance style requires at night four times as many lamps for illumination as the light color ornamentation of our rooms of twenty-five years ago, and analogous to this the former style will require therefore four times as much exposure. How the brightness of an illuminated object can change, is shown by a number of experiments by Kirschmann. He does not give absolute brightness in standard candles like Abney, but only conditions of brightness J and J¹ under different illuminations.

| J. | J ¹ . | J: J ¹ . |
|---|--|---------------------|
| 1.—Blackened cardboard in sunlight..... | White paper in sunlight. | 1 : 52 |
| 2.—Blackened cardboard in diffused day- light..... | White paper in sunlight. | 1 : 600 |
| 3.—Blackened cardboard in deep shadow... | White cardboard in bright sunlight (be- low 60 degrees). | 1 : 3,700 |
| 4.—White cardboard, illuminated by dif- fused daylight and the gas flame at 10 cm. distance..... | Gas flame, flat burner to illuminate the scale of a spectroscope. | 1 : 85 |
| 5.—The same cardboard, illuminated by subdued daylight and the gas flame at 1.50 m. distance..... | The same gas flame. | 1 : 1,600 |
| 6.—White window sash of the laboratory... | Clear sky (blue, observation therefore difficult). | 1 : 410 |
| 7.—The same..... | White clouds. | 1 : 670 |
| 8.—Gray wall of a house in full daylight (about 25 m. distance.)..... | Clear sky. | 1 : 50 |
| 9.—The same wall..... | White clouds. | 1 : 145 |
| 10.—Gray wall of a house, in diffused day- light, during rain..... | Cloudy, uniformly covered sky during rain. | 1 : 24 |
| 11.—White window sash of the laboratory..... | Cloudy sky during rain. | 1 : 423 |
| 12.—The same window sash..... | The gray wall of No. 10. | 1 : 23 |
| 13.—Evening sky covered by very bright, white clouds..... | Full moon. | 1 : 340 |
| 14.—Pretty clear and very bright evening sky around the moon..... | Full moon. | 1 : 1,240 |
| 15.—Very clear night sky..... | Moon at its highest point. | 1 : 4,500 |

This table shows what extremely different brightnesses the photographer will have to contend with in taking an interior. It is, therefore, not to be wondered at that so many under- and over-exposures are made.

BERLIN, October, 1892.

LETTER FROM FRANCE.

By LÉON VIDAL, Editor *Le Moniteur de la Photographie*.

Polychrome Photography.—Orthochromatic Photography and Its Industrial Application.—Photographers' International Union.—Stereoscopy.—Telephotography.—Bibliography.—Use of Aristotype Papers.

Messrs. Auguste & Louis Lumière have endeavored to repeat the experiments made by Mr. Lippmann towards the direct reproduction of composite colors, and their first trials have been crowned with very encouraging success.

They have shown us two special proofs, one of them representing fruits and the other flowers. Several colors are shown bright, and show the possibility of accomplishing some progress by perfecting the application of the method.

Up to the present the endeavor has been to reproduce composite colors in the same manner as simple spectral colors are obtained. If this is attained perfectly it will be a great thing accomplished, but there will yet remain to be found the means of obtaining the same results without being obliged to look for a given angle of reflection. This is one of the great drawbacks of the Lippmann method, and, as we have before stated, his polychrome proofs gain considerably by being seen by projection.

We believe that owing to the improvement of orthochromatic preparations we will yet obtain better results, and such is the opinion of Messrs. Lumière. It is evidently necessary that one and the same plate be sensitive to the red, green and blue rays, and it is difficult to accomplish this *desideratum* in a perfect manner.

Yet the thing is possible with the aid of well-selected colored screens, and with plates sensitive at the same time to the yellow, green and red rays.

As we are speaking of orthochromatic photography, let us dwell for a moment on such an interesting subject. It is undeniable that this kind of photography tends to extend itself more and more every day, but it is none the less true that this expansion is realized with a slowness that is to be regretted. We can hardly understand the reason why there is such a lack of disposition to adopt a method which is more complete than the ordinary, and gives results much more satisfactory, both from the point of view of faithfulness and of artistic value.

Some time ago we had occasion to write to a dealer in photographic materials at Marseilles, asking him for some orthochromatic plates, and he answered that he had none, as he had no demand for them. This is hardly to be believed when we remember that in Marseilles there are at least thirty professional photographers and several hundred amateurs. And yet it is true that even in Paris the use of orthochromatic plates is very limited.

Although it is difficult to indicate with certitude and precision the causes for this tardiness in a line of progress which, notwithstanding, seems to impose itself, it must be admitted that the discredit of orthochromatism in France may be partially traced to the manner in which the thing was presented from the start. The firm specially engaged in the manufacture of that kind of plate did not produce preparations of a standard quality, and issued erroneous instructions, saying, for example, that their plates were orthochromatic for all the spectral scale, which is not exactly true.

Many photographers made experiments, the results of which did not fulfill the promises made by the manufacturers. As a result we have the rejection of

that product and the discredit in a general way of a method, good in itself, and which ought not to suffer the consequences of a defective manufacture and incorrect or insufficient instructions.

Unfortunately, the public is not well posted yet on what is meant by orthochromatic plates. There are several classes; some, according to our learned confrère, Dr. Vogel, would be sensitive to all the spectral radiations. They would in this case attain perfection itself; and, not having tried them, we can say nothing to the contrary.

Other orthochromatic plates have different qualities; generally, they are specially sensitive to yellow radiations and not to the red radiations. To slacken the action on them of the blue and violet radiations, a yellow screen is indispensable.

These plates are very convenient, above all for landscapes and marine views, in which we may say the red does not exist. But they would be insufficient for the reproduction of flowers, costumes and all other objects and subjects where red is to be seen. Many photographers, ignoring this distinction, have been discouraged because they, having taken orthochromatic plates of any kind for the reproduction of paintings, have found that the reds were brought out to less advantage even than with ordinary plates. The advantage is not realized, but to the benefit of the yellow.

They should have known that the plates especially sensitized to yellow are absolutely insensitive to the red radiations, and they would, in such case have used some preparation containing either cyanine, chlorophyl or methyl violet, products which give to plates already sensitized to yellow the sensitiveness to red.

In one word, the education of photographers, both amateur and professional, or of the greater part of them at least, has yet to be accomplished in the matter of orthochromatism, and this explains also why the so-called ordinary plate has not yet given away to a more perfect preparation.

From a point of view of the applications of photography to the graphic arts, especially to typography and lithography, orthochromatism is destined to play a very important role, and one must ask with astonishment why it is that printers employ it so rarely? We know of a large number of establishments engaged in lithography and photo-engraving in Europe which seem to be absolutely ignorant of the advantages that could be derived from orthochromatism. And yet chromo-lithography could find in it a powerful auxiliary, not only to arrive at the truthfulness of design and of expression, but also to attain the exactness of colors.

In this case also, false directions have been the cause of the many failures followed by the discarding of this method. It has been held that the theoretic truth based on the possibility of realizing with only three colors all the tones of Nature was also an industrial fact or an industrial possibility. This is an error. We will never be able to arrive to an exact copy of a polychrome painting with only blue, red and yellow pigments.

But it would be a great thing to have recourse to the three plates furnishing almost exact monochromes, with only the imperfections due to orthochromatism to be corrected by suppression or addition. This correction would be nothing compared to the great labor required for the execution of monochromes made by hand. And as to the final work, it could not be but considerably more artistic, and nearer to the truth. This is undeniable.

We are not yet aware exactly what has been the result of the first session of the Photographers' International Union. It was held at Antwerp, and the results of that inauguration have been very little spoken of. To a certain extent, we can conceive a national understanding, although there is a great deal to be said against such a grouping together; but we do not carry blind devotion to the extreme of admitting that anything really useful can come out of this International Union.

May the events prove that our scepticism has no foundation. We would be the first to confess our error and to be happy at the success of such association.

A word on stereoscopic photography in order to express our regret that it should be so little cultivated. The Monocular Hand Cameras are less bulky, the entire outfit is lighter, and their proportions more compact; but the difference is not so great that it should cause the neglect of such an interesting application, which permits us to see the reproductions with the illusion of relief.

In this case, as with orthochromatism, the routine and the horror of the least extra difficulty are the chief causes of the indifference of amateurs towards a method of such great value.

As to telephotography, it seems that it is gaining headway. The special services, which it can render to the army, to the geographical explorers and even to artists, are such as to warrant the presumption that a telephotographic objective will necessarily have to be added to every photographic equipment. The immediate enlargement thus obtained could not be realized by an after-enlargement from a small proof. The results of this kind obtained with Dallmeyer's tele-objective are really remarkable, and we may specially mention, as an example, the view of Mount Blanc taken from Geneva by Messrs. Boissonnas.

There are few new works among recent publications relating to photography, but we owe special mention to the second part of the "*Traité Général d'Eder, Consacrée à la Chambre noire et à la Photographie Instantanée*" (Eder's General Treatise on the Darkroom and on Instantaneous Photography).

This work is very conscientious and accomplished with the vast experience and the undeniable ability of our eminent colleague.

There have been many failures this summer in the use of aristotype paper, both collodion and gelatine. The intense heat which we have undergone this summer has been the cause of these failures, which have been manifested by the detachment of the vehicle and the loss of the proof. The most natural remedy consists in the employment of refrigeration.

But it is not always easy to have in summer cold water or other refrigerating means, and, therefore, a great deal of annoyance has been experienced.

If it were not for this fault, which is only produced where there is great heat, these positive papers are of a relatively easy use, and they give results much finer and more vigorous than albumen paper.

Its employment is becoming more and more popular, and it may end by completely dethroning albumen paper.

How many eggs will then be restored to the nourishment of man!

PARIS, October, 1892.

All communications for the columns of the BULLETIN should reach us on Monday preceding the day of issue, to insure their publication at that time.

ON DIAPOSITIVES.

BY P. C. DUCHOCHOIS.

When diapositives are wanted the same size as the negatives, they are generally made by contact and silver development or collodio-silver bromo-iodide dry plates, or by printing out on collodio-silver chloride plates. The latter method is the best. Here is a formula for the emulsion :

A.

| | |
|--------------------------|----------|
| Magnesium chloride..... | 1 gram. |
| Pyroxyline (powder)..... | 3 grams. |
| Alcohol..... | 100 c.c. |
| Ether..... | 100 " |

B.

| | |
|------------------------------|----------|
| Silver nitrate (powder)..... | 4 grams. |
| Water, hot..... | 4 c.c. |

Dissolve and add—

| | |
|--------------|----------|
| Alcohol..... | 100 c.c. |
|--------------|----------|

Then mix gradually—

| | |
|------------|----------|
| Ether..... | 100 c.c. |
|------------|----------|

Let stand a few hours. Filter and dissolve—

| | |
|--------------------------|----------|
| Pyroxyline (powder)..... | 3 grams. |
|--------------------------|----------|

Add B to A in small quantities, shaking well after each addition ; then add 5 decigrams of citric acid, dissolve in a little hot water, and afterwards 3 drops of ammonia. Let stand for twenty-four hours, filter, and the emulsion is ready for use.

The proofs should be much over printed and fixed in a weak solution of sodium thiosulphate without toning when the diapositives are wanted in photo-gravure and other industrial photo processes.

This process yields excellent results, no doubt, but a more simple and, I think, more reliable process, that employed by European photo-engravers, is to make the diapositives by the carbon process. The *modus operandi* is well known, described in every treatise on photography : developing with water, for that purpose heated to a temperature as low as possible, a carbon print on a glass plate prepared with a bichromated gelatine substratum insulated from the back of the plate and washed.

A modification of this manner of operating devised by the writer presents some advantages, among which is that of obtaining diapositives without distortion and of exactly the same size as the negative, this being an impossibility by the ordinary process, since by fixing on the plate for development, the tissue extends both ways.

The process now recommended consists in sensitizing the tissue as usual, then attaching it in perfect contact by means of the india-rubber squeegee on a sheet of celluloid, upon which it is allowed to dry. The tissue is then printed through the celluloid support and the image developed in the ordinary manner. The celluloid sheet being very thin ($\frac{1}{1000}$ ths of an inch), one thus obtains a diapositive quite as sharp as the negative, provided care has been taken that the light falls perpendicularly on the printing-frame during the whole exposure time.

Duplicate negatives, reversed or not, can be printed from these diapositives. The *modus operandi* suggests itself.

The reversed positive image on the celluloid sheet seen face upwards is not at all objectionable to make sharp reversed impressions on stone, on metal plates, etc. However, if one objects to it, we nevertheless advise him to use celluloid sheets instead of glass plates to transfer and develop the image in the ordinary manner, especially when the method of the three impressions or that of the three clichés is employed in photogravure, the celluloid permitting one to trim and cut the diapositives square to the required size.

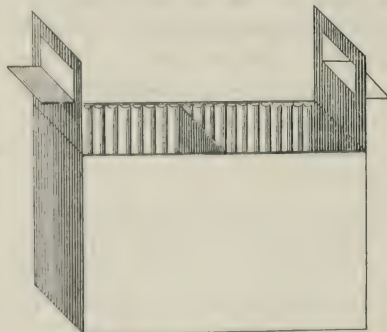
It is evident that celluloid sheets can also be employed for the purpose in question, as supports for gelatine and collodion emulsions, but we found that the carbon process is more expeditious and simple; moreover, the image can be reduced in intensity by warm salted water, and intensified in many ways, with potassium permanganate, for example, which is the method most generally employed.

A USEFUL BATH.

BY A. E. DOUGLASS.*

BELOW is given a description of an article which has proved of great service in our darkroom. For our regular work with 8 x 10 plates we have the solutions in large wooden boxes with cut sides, each box capable of holding two dozen plates. When developing 4 x 5 plates in small numbers we have found it convenient to place them in these large baths, with the result that, with the best of care, a plate occasionally gets broken from falling over and being struck by another. Accordingly I have had a false bath made which supports the 4 x 5 plates in the large bath just beneath the surface of the solution. A description of it may prove useful to photographers.

The length of this false bath is such that it will fit crosswise into the 8 x 10 bath, and its width and height are slightly greater than the width and height of



the places it will hold. It has no top or bottom, and the plates are prevented from slipping through by a slight projection running along each side and supporting the corners of the plate. A partition runs across the middle to serve as a brace for the sides. The ends are raised and, at an inch above the body of the box, have a cut made in them, allowing a tongue, as it were, to be bent outwards. This prevents the box from slipping down into the large bath, and at the same time turns the upright ends into efficient handles. The best material to make it of would probably be hard rubber. However, we had one of tin in use

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for three months before it rusted sufficiently to come apart, but it discolored the hypo solution very badly—an objectionable feature.

To hold 4 x 5 plates in an 8 x 10 bath the dimensions are as follows : length, outside, $7\frac{1}{2}$ inches ; width, outside, $4\frac{1}{4}$ inches (a little more if made of thicker material than tin ; height, $5\frac{1}{4}$ inches ; depth to which it sinks in large bath, 6 inches. Holds eighteen plates. It may be first placed in the hypo, and the plates put in it as fast as developed. When they are fixed, the whole can be removed and washed and placed in the alum, and finally in the water ; in fact, unless the bath itself is needed again, the plates need not be removed until dry.

The accompanying sketch (not drawn to scale) may explain this false bath better than any description by words.

AREQUIPA, PERU, August 21, 1892.

[From *The Photographic News*.]

OVER-EXPOSURE : A RATIONAL METHOD OF ORTHOCHROMATISM.

PHOTOGRAPHERS have agreed upon giving the designation of over-exposure to a negative photograph in which the portions that have been strongly lighted, instead of being almost opaque, are, on the contrary, of a milky grey, dull, without decided contrasts with the portions that have not received strong light, or those reflecting the slightly refrangible rays.

Over-exposure is observed, therefore, most often when great contrasts of light exist in a landscape, and when the time of exposure has been calculated, not for the strongly lighted portions, but for those which are not so. The contrast of lights and shadows produces, therefore, on the negative an uniformity of values—everything seems faded out ; on the other hand, the details abound in the shadows, as the exposure, having been sufficient for the badly lighted portions, each detail appears with its proper tone. If, on the contrary, the exposure has been calculated for the high lights, they come out vigorously, brilliantly, and the contrast observed in Nature is found again in the negative, and later in the print. To speak truthfully, this contrast is forced ; it is more apparent than in Nature, and an entire portion of the landscape is black, pasty and almost without details. Must we, therefore, with ordinary plates, abandon the hope of obtaining at the same time the true tone of the lights and shadows, and the abundance of details in the sombre portions ? Are we always to choose between these two results which seem to exclude each other to such a degree that we are almost tempted to accept this choice ? I do not think so ; but, on the contrary, believe that it is possible, with a little patience, to get good negatives possessing the proper contrasts. I would first state that, in most cases, between over-exposure of the lights and under-exposure of the shadows, photographers choose the second of these conditions, because, with suitable retouching, they can afterward correct what is too glaring in the contrasts. They endeavor in a print to preserve what is most in view and producing the greatest effect, at the expense of what does not immediately attract attention. Taking, for example, a glacier with a strong light on the second plane, and a pine forest on the first plane, the exposure would be made for the glacier, and not for the forest.

Later, in printing, the forest will be masked, in order that it should not print too quickly, and the contrasts be not too strong. This is the accepted way ; but it is true, nevertheless, that, if the glacier has proper tone, the forest, without being black, is totally wanting in details, and the entire first plane will be sacrificed. I think, therefore, that we should do exactly the reverse ; pay no attention to the glacier, and expose for the forest as if it were alone ; and as there may be some doubt on the time of exposure exactly suitable, and there might be risk of under-exposure, I propose for all well-lighted landscapes the uniform exposure of fifteen seconds, when working with an objective and plates that are rapid. It is possible even in certain cases to greatly

exceed this exposure. I have made, in the month of July, with a bright sun, excellent plates of great softness and remarkable detail, by giving an exposure of one minute with the Lumière plates (blue label), and a Zeiss objective 1: 7.2 of 230 mm. focus diaphragm *f*-12. I hasten to state that the secret of this method, as may well be supposed, rests entirely in the development. When we know that over-exposure exists, it is possible, by suitably handling the development, to obtain all the details of the sombre portions without the light portions coming too soon, consequently being lost. For this it is necessary to arm one's self with great patience. Up to the present time I have proceeded as follows:

The plate, once exposed, is plunged for a minute into a 10 per cent. solution of bromide and sulphocyanate of potassium, these two salts being in equal parts; the plate is now rinsed in water, and the development begun. The formula which I have used up to the present time, and which has given me good results, is the following:

| | |
|-----------------------|-----------|
| Hydroquinone..... | 16 grams. |
| Sulphite of soda..... | 120 " |
| Caustic potash..... | 16 " |
| Water..... | 2,000 " |

The plate develops very slowly; if, owing to the temperature, it develops too rapidly, it would be useless to add bromide, but it would suffice to remove the plate from the bath, and dilute the latter with a sufficient quantity of water. It is certain that practice is required to successfully connect this operation, as the appearance of the plate is not at all the same as usual; the image has a light tone, which rapidly passes to black, but it is difficult to seize the precise moment at which the action of the reducer should be stopped. Fixing and washing are done in the ordinary manner. The method of over-exposure offers for time-landscapes some incontestable advantages. In the first place, the greens, the reds, and the yellows are not sacrificed, but have all the time necessary to impress the plate. There results from this a scale of tones approaching very closely to the truth, like the one obtained with certain isochromatic plates and a compensation screen. If development has been well directed, slowly and prudently, the whites lose but little, and we obtain contrasts that are not glaring, but soft and pleasant to the eye. Finally, a last advantage of this method is that fog cannot be produced. Plates that fog regularly with a too short exposure, when over-exposed, have given prints remarkably brilliant and sharp.—*Revue de Photographie (Suisse)*.

[*Camera Club Journal*.]

TONING PLATINUM PRINTS WITH URANIUM.

BY F. FITZ PAYNE.

I HAVE recently been working with the new cold-bath platinotype paper, and I find, as no doubt others have done, that many prints, although as far as one could judge on taking them from the printing frame the details were apparent, yet, on development, turned out to be under-printed. This, in passing, I may remark, is the only drawback I have discovered in the use of the new paper. The tones in prints rightly printed are admirable, and when brush development is used, the normal developer being mixed with an equal quantity of glycerine, the process of development is very much under control.

As platinotype paper is rather expensive, I thought I would try if the under-printed prints could be improved by uranium toning, and I made up the following solutions:

A.

| | |
|--------------------------|--------------|
| Uranium nitrate..... | 10 grains. |
| Glacial acetic acid..... | 1 dram. |
| Water..... | to 5 ounces. |

B.

| | |
|--------------------------------|--------------|
| Ferrocyanide of potassium..... | 10 grains. |
| Glacial acetic acid..... | 1 dram. |
| Water..... | to 5 ounces. |

For use, mix equal quantities of A and B. These solutions, unmixed, will keep for an indefinite time, but, after mixing, very soon deteriorate.

The prints are developed and fixed in the usual way, and, after they have been dried, should be inserted, one by one, in the toning solution, and will then, if all the iron has been properly fixed out, tone to any color, from a nice brown to a Bartolozzi red, according to the time they are left in the solution. In order to make sure of the absence of iron from the paper, it is desirable, when it is proposed to tone prints, to give them an extra bath of double-strength hydrochloric acid; the presence of iron is shown in the toning process by blue stains.

The color in the prints, when obtained, appears to me to be permanent, but, as I have only recently commenced experiments, it is, of course, difficult at present to be certain as to this. It seems to me that this process could be applied to produce sepia prints, and thus avoid having to use the special paper supplied by the Platinotype Company.

THE MANIPULATION OF CHLORIDE OF SILVER GELATINE PAPER.

BY EDWIN UNDERWOOD.

[Birmingham Photographic Society.]

IN laying before you my method of manipulating chloride of silver gelatine paper, I make no pretensions to exhaustiveness or completeness, either as to the various ways in which the paper may be treated or of the various makes obtainable. Besides some that I made myself some years ago, the only brands I have used are the Ilford, the Eastman and the Birmingham Photographic Company's "Criterion," most of my prints being on the Ilford and the Birmingham paper. Although the general treatment of them is the same, they all have various characteristics, which require to be known. They differ from each other in the color they assume in the printing, and they behave differently in the after-operations of toning and fixing. You will see that they are over-printed, certainly not more, if so much, as albumen prints, and in this particular they compare favorably with some of the older gelatine papers, which required such a depth of over-printing as to render it difficult and uncertain to print to a nicety on them. The loss of depth with these papers occurs mostly in the washing before toning, and they lose but little in the fixing. They lose less with the combined toning and fixing than with toning and fixing done separately. Gelatine chloride paper must be kept dry, as it is more susceptible to damp than albumen paper; if not kept dry, it will give patchy and uneven prints. If the printing is done out of doors, it will be advisable to have an india-rubber pad in the frame at the back of the paper; otherwise it is not necessary. After the printing comes the toning, and the formulas for toning these papers are very numerous.

TONING AND FIXING WITH THE COMBINED BATH.

The toning and fixing operations may be conducted separately, or a combined toning and fixing bath may be used. The simple toning bath varies from the single sulphocyanide of ammonium and chloride of gold, 1 to 1, of half a dozen chemicals, and some of the combined baths are stupendous mixtures, containing alum and lead salt abominations. Why they are out of place, is because they decompose a portion of the hyposulphite of soda, and liberate a portion of the sulphurous acid and sulphur, which is held in combination. These will combine with the silver of the image and form sulphide of silver, causing what is known as sulphuration, or sulphur toning, and prints so toned are liable to fade and discolor. I have here a series of

eight prints toned and fixed in the combined bath. Four of them are on the Eastman paper, and four on the Birmingham Photographic Company's "Criterion" paper. Two of each sort of paper were treated in a bath containing—

| | |
|---------------------------------|-------------|
| Hyposulphite of sodium..... | 4 ounces. |
| Sulphocyanide of ammonium | 100 grains. |
| Phosphate of sodium..... | 60 “ |
| Chloride of gold..... | 2 “ |
| Water..... | 16 ounces. |

The other four were treated in a bath in which 100 grains of borax replaced the phosphate of sodium, and you will see on inspection that there is no perceptible difference in tone.

All combined baths require an unfixed print or some scraps of silvered paper soaking in some hours before use. The one great recommendation of the combined bath is, of course, that it is much less trouble than toning and fixing separately, there is much less swilling and washing. The danger attending its use is that, when it has been in use some time, the fixation of the prints may be imperfect, and, although the gold may be exhausted, it will go on toning. Now, these conditions, imperfect fixation and sulphur toning, are precisely the conditions under which the print may be certain of a short life, and will result in the unmerited condemnation of paper and bath. I know of no reason why, if the bath be used fresh and with sufficiency of gold, the toning and fixing should not be complete and the prints be as permanent as if treated in any other way; but, if the bath is used too much, you get yellow-stained prints with the half-tones, a most unpleasant color.

I have here some prints made on the Ilford paper more than twelve months ago, and treated in the combined bath. You will see that they are warm in tone, and the combined bath has in my hands given better results in this particular than separate toning. When using the combination bath, the color is judged from the surface, not by looking through, and the prints dry perceptibly darker.

TONING PURE AND SIMPLE.

Coming now to toning pure and simple, the bath I have used mostly is the Ilford formula, viz.:

| | |
|--------------------------------|------------|
| Sulphocyanide of ammonium..... | 30 grains. |
| Chloride of gold..... | 2½ “ |
| Water..... | 16 ounces. |

When a tube of chloride of gold is broken it has to be made up into a solution of definite strength, and will usually be found to be decidedly acid. A small scraping of ordinary chalk, not French chalk, should be shaken up in it to counteract this acidity. The prints require washing in several changes of water before toning, and they should not be left soaking in the first two changes. On immersion in the toning bath the prints change more or less with various papers to a yellow color. This soon passes away, being succeeded by a purplish brown, and the progress of the operation is judged by holding the print up against the light. At first the print appears of a reddish color all over. The next stage the lighter half-tones become dark or black, followed by the middle tones, and when the red has almost disappeared from the deep shadows the toning is complete, the surface color being of a peculiar bluish purple. A washing in two or three changes of water follows, and fixing in hyposulphite of sodium, 3 or 4 ounces to the pint of water, a small bit of washing soda being dropped in to counteract possible acidity. The prints require a final washing of about two hours under the tap or in a pan of water changed many times. This toning bath, as you will see from these prints, gives dark tones, being what I might perhaps call a warm black.

With this bath I have been unable to obtain the lighter or brown tones on any of these papers.

If the print is taken out while there is any considerable portion of red left in it, you have the shadows of a brown color, but the lighter parts have toned completely to the warm black, and the result is an unevenly toned print, as in two I will pass round. With this bath, therefore, you have to tone completely, and it has the advantage that you can depend upon getting a very fair uniformity of color in the prints. The bath will keep, and can be used for some time, but I prefer to use it not more than two or three times, adding, of course, more gold as required. It is recommended to use the old bath as part basis for a new one, but I prefer to make up a fresh one, having a weakness for new and clean baths. Most of the toning troubles with this paper will be found to arise from an insufficiency of gold, and we should be generous with the gold, remembering that the more gold the prints will take up, the better it will be for their permanence. I have used the borax toning with the Ilford paper, and have obtained pleasing, warm tones with it, as seen from these prints. The proportion is 90 grains borax to 16 ounces water; gold, 2 grains, more or less. Gelatine papers require careful handling, as the gelatine, when wet, is very soft and soluble. Advantage is taken of this softness, when wet, to squeegee it, as it is called, on to a surface of glass, or other suitable non-absorbent material. When dry, it is stripped off, and retains the impression, whether glazed or mat, of the surface which it dried. All mine are, as you see, mat-surfaced, and are done on ground glass, and as there is sometimes a difficulty experienced in separating the print, or some portions of it from the glass, I have thought it best to go into details.

HOW TO OBTAIN MAT SURFACES.

In the first place, you must have the right sort of ground glass; the ordinary window description is of no use at all for the purpose, it is altogether too rough and coarse, and the prints will not separate readily, neither will it give the surface required. The sort to employ is such as is used for focusing screens in cameras. The first thing to be done is to make the glass thoroughly clean, and this I do with soap, soda, hot water and a scrubbing-brush. I do not find acids, ammonia, or such like, at all necessary. Give the glass a good scrubbing on both sides, and then wash thoroughly under the tap, rubbing it all over, both sides and edges, so as not to leave any trace of soap or dirty water. Then dry off with a perfectly clean cloth. This done, it has to be rubbed over with French chalk on a piece of soft rag. Use plenty of the chalk and rub it well all over, but not hard enough to bruise the talc. If the chalk sticks on to any particular part and will not rub off, it is a patch of dirt, and is insufficiently washed. It is not necessary to wash the glass every time it is used; if it is kept clean and not finger-marked on the surface used, it only requires rubbing lightly over with the chalk. Another point, too, worth noting, is that after the glass has been stripped from a few times, the adhesiveness of the print is very much reduced. The first time of stripping, the hold on to the glass is so great that you feel sure that something will happen, but after a few times the print comes away quite easily and altogether. The print may be squeegeed onto the glass direct from the washing water, or it may be dried first. I usually let mine dry, and lay them down on the glass some other convenient time. Taking a dry print, then, it is immersed in clean water till quite limp, which will be in a minute or two, but do not leave it soaking for a length of time. Having then lightly dusted off the French chalk with a clean, dry cloth, we brush over the surface of the print while under water with a camel's hair brush, to remove air bubbles and any dirt there may be there, and lift out the print by two corners, bringing with it as much water as we can. Then we lay it down on the glass in such a manner as to cause the water to drive out the air from between, and finish with a few light strokes with a roller squeegee. When it is thoroughly dry, but not before, the point of a knife is inserted under a corner, and the print lifted from the glass.

PRACTICAL PHOTOMICROGRAPHY.

BY MR. A. F. STANLEY KENT, M.A., F.G.S.

[Read before the Camera Club.]

(Continued.)

A form of apparatus that I have largely used consists of the following parts: A bracket is fixed upon a wall just below an aperture through which the light enters. Upon the bracket the microscope is supported in a vertical position, and the entering light is reflected upwards and through the microscope by means of the mirror. Immediately above the bracket is fitted a support for the photographic plate, and this support can be placed nearer to or farther from the microscope as a less or greater amplification is desired. Around the whole of the microscope and bracket an opaque cloth is arranged to prevent the light entering by the aperture in the wall from escaping into the room. The eye-piece of the microscope projects through a hole in this cloth. The plate support is provided with three points upon which the plate rests. Thus, there is no possibility of want of register between the focusing plate and sensitive surface as in the camera slide. Exposure is effected by means of a plate of ruby glass. The focusing is accomplished by placing the focusing screen upon the three points of the plate-holder. A general idea of the image is gained by using an unexposed gelatino-bromide plate as a focusing screen, and the final touches are given by replacing this with a piece of plate glass, and examining the image upon it by means of a double convex lens of long focus, or, what does equally well, the field lens from an ordinary eye-piece of low power. All adjustment of the fine focusing screw are made through the opaque cloth with ease. In an apparatus of this kind one is working inside the camera, and it is essential that all white light shall be excluded. The apparatus is equally well adapted for photographing either wet or dry preparations; and, while admitting that for constant work with the highest powers and dry specimens, one of the horizontal forms of apparatus would probably prove more satisfactory, yet for doing work which is only taken up at intervals, and where the microscope cannot be devoted exclusively to photomicrography, it will be found an arrangement possessing many advantages.

Whatever the form of apparatus decided upon, an efficient form of illuminant is a necessity; and while many good workers prefer still to use the common paraffin lamp, perhaps the best illuminant for all-round work is the oxy-hydrogen limelight, and particularly that form of the light in which the gases are mixed before ignition. In this form of illuminating apparatus an extremely small point of very high brilliancy is obtained, and the diffusion of brilliancy observable in the blow-through form of jet is absent. With proper care it is quite possible to use the hydrogen for the mixed jet direct from the main, *i. e.*, from the nearest gas bracket, so that only one bottle is necessary, and with proper management such a light is very economical, though, of course, it cannot compare with the paraffin light in this respect.

The electric light, both arc and incandescent, has been extensively tried by myself and others, but with disappointing results, and in my own practice it has been practically given up, except in cases where it is necessary to take instantaneous photographs of moving objects. Even under such circumstances, direct sunlight, controlled by a suitable heliostat, is quite as efficient if the weather happens to be favorable.

Whatever illuminant be ultimately chosen, a very great deal of the success of the illumination depends upon the condenser that is to be used; there again, but in a less degree, what was said of the objective applies. Good work may be done, with moderate powers, with the ordinary Abbé condenser, but for high powers and the very best results, an achromatic condenser specially made for photography is required, and one cannot do better than purchase the one made by Zeiss, or one of those made on a similar model by the English firms. Rack and pinion for focusing the condenser is necessary, as also is some form of centering adjustment for placing the condenser ac-

curately in the optic axis of the microscope. Far too little attention has hitherto been given to the advantages resulting from an intelligent use of the condenser, and it is not at all unusual to see, even in first-class laboratories, microscopists who keep their condenser invariably in one position, and never think of focusing it accurately upon the object under examination.

Very often, too, the stops or diaphragms are most unintelligently managed, and the result is an unsatisfactory visual image; and if such an image is photographed, it must result in an unsatisfactory photograph, for one of the first things to be thoroughly understood, and one of the most important lessons that a photomicrographer can learn, is that the best visual image gives the best photograph, and no satisfactory negative can be hoped for unless a satisfactory visual image has first been obtained.

So far as moderate powers are concerned, but little difficulty will be encountered in the arrangement of the illumination; but with low powers a great difficulty will be experienced in ensuring that the whole field is equally illuminated, and not infrequently it will be impossible by the ordinary means to effect this. When such is the case, the interposition of a piece of opal glass, as near the object as possible, but far enough away to be well out of focus, has often helped me very considerably. I have usually placed it under the slide itself, and if this is not sufficiently far away to be thoroughly out of focus, I have been accustomed to interpose one, two or more plain glass slides, to give the necessary distance. Ground glass is not nearly as satisfactory as the opal, as the grain is too coarse. Perhaps, however, the best method of all of getting an evenly illuminated field with low powers is by using the bull's-eye condenser in the manner indicated by Mr. Nelson, as by this method no semi-opaque object is interposed between the light and the plate, and the full power of the illuminant is utilized; the method also has other advantages.

As regards the plates to be used, very little need be said. All that is required is that the plate be such that it will give a plucky image with plenty of contrast, and at the same time not be so slow as to cause the exposure to be unduly prolonged. These characteristics I have found to be well marked in the thickly coated landscape plates made by Messrs. Thomas, and for ordinary work these plates are largely used.

For work in which the objects to be photographed are strongly colored, it becomes necessary to use orthochromatic plates, with or without a screen, as the case may be, and care must be taken that if a screen be used it be of such a kind that it will not interfere with the perfection of the image, and if it be placed (as is often the case) in the diaphragm carrier, it should consist of a glass plate, the surfaces of which have been worked to a plane figure.

And now, having given a description of some of the apparatus used in photomicrography, it remains to call your attention to a few of the difficulties that are sure, sooner or later, to beset the worker in the science.

And, first, as to accurate focusing. In case the ground glass is used, it is often the case that insufficient light will be obtained for focusing with ease and pleasure in the ordinary way, and, in consequence of this difficulty, I have adopted the plan of getting the image roughly arranged upon the ground glass, or, in the case of the vertical apparatus above described, on an ordinary unexposed gelatino-bromide plate, and then completing the focusing on a plain sheet of plate glass (with a diamond cross drawn on its under surface) by means of a bi-convex lens of low power, or the field lens from a low-power eye-piece. In this way no difficulty will be encountered, and the focusing can be done to a nicety. After having accurately focused the image, it is a good plan to leave the instrument to itself for a few minutes, and then see whether the focus has altered, as often by the expansion of different parts of the microscope, caused by the heat, the object may be thrown out of focus, and if this occurs during exposure, the result must be failure.

Having then made certain that the image is accurately focused, another difficulty arises, viz., that of exposure. And for exposure in photomicrography, just as for exposure in landscape work, no definite rules can be given. Practice only can teach the correct amount to be given to each preparation under different conditions of mag-

nification and illumination. It is far better to use up a few plates at the beginning by making experiments than to attempt to be economical and learn exposure from books.

It is often necessary, however, to give a shorter exposure than for some reasons seems desirable in order to obviate the effects of one of the worst enemies of the photomicrographer, viz., vibration.

With high power and delicate objects, it is sometimes well nigh impossible to focus at all, unless special precautions are taken against vibration of the apparatus; and, under all circumstances, it is best to reduce to a minimum the chances of a failure through prolonged exposure, and a consequent liability to movement. If working in a town, it is best to work at night as far as possible, to place the apparatus as far from the roadway as may be, and upon the most solid foundation available, and to interpose between the support and the base board of the apparatus a series of india-rubber blocks, to reduce as far as possible the tremor produced by traffic. The apparatus described above is necessarily as rigid as the building in which it is situated; and, inasmuch as the street is at a considerable distance, and is not used for heavy traffic, vibration has given me no great difficulty. In a busy town, however, it will be found to be advantageous to break up the vibration as far as possible by means of the rubber blocks, and not to fix the apparatus immovably to the wall.*

Almost all of the slides that I have to show you are, as I said before, illustrations of faults, and as such only are they interesting.

The first shows general fog due to an escape of light into the room. The remedy in this case is obvious.

The next one shows fog due to another cause. The sides of the circular aperture in the bracket supporting the sensitive plate were blackened, but the black was not sufficiently "dead," and as a result fog has appeared. Upon re-blackening the bracket, this cause of failure disappeared.

The next slide is a negative showing over-exposure, and, as it corresponds pretty nearly with a similarly over-exposed landscape negative, I need not say very much about it. I wish to point out, however, that in photomicrography over-exposure is of far more importance than it is in landscape photography; it is so much more difficult to obtain the necessary contrast in a photomicrographic negative.

The next two slides illustrate the effect of the projection eye-piece in obviating all reflection from the interior of the tube, and then follows a photograph of anthrax bacilli, showing a sort of halo on one side of each organism, produced by imperfect centering of the condenser. Some of the other slides show failures due to want of coincidence between the chemical and visual foci.

Other slides were shown and explained by Mr. Kent, and, finally, special attention was called to a small series of slides illustrating the difficulties of photographing almost completely transparent objects. The special objects chosen were the wings of various butterflies and moths, the scales of which had undergone degeneration in certain places in order to produce transparent patches on the wings and thus simulate dangerous or distasteful forms. Some of the degenerate scales were of extreme transparency, and the negatives had been obtained by giving a very short exposure, and exercising great care in development.

DISCUSSION.

In the discussion that followed the paper—

Dr. Mummery described how he had worked up to 1,000 diameters with paraffin as an illuminant, and found sufficient light for focusing. His exposure was sometimes two minutes with the $\frac{1}{12}$ -in. oil immersion apochromatic.

Dr. Clifford Mercer thought that, with regard to flatness of field, a great deal of difference existed between different makers. The lenses of William Wale, of Jersey, had comparatively flat fields; Zeiss sacrificed flatness of field to central definition. The focusing should be done on a plain glass. Sometimes gave three-quarters of an hour exposure. Recommended Nelson's method for lighting large fields.

Dr. Charters White had found no difficulty in photomicrography with low powers.

Dr. Bousfield had encountered many difficulties. He regarded the vertical apparatus as being too rough, and complained that not a single sharp bacillus had been thrown on the screen. Thought that too high objectives had been used, and too short a camera. With regard to low powers, had been able to satisfactorily illuminate a section of the spinal cord with the paraffin light. By means of rubber blocks had been able to get rid of vibration so perfectly that he was able to photograph the

* The advantage to be derived from using rubber blocks, as described, were first pointed out to me by Mr. E. C. Bousfield.

flagellum of cholera bacillus, even in the Old Kent Road. Recommended more refined methods. Regarded a slight want of register between focusing screen and sensitive surface as of no importance. Disagreed with Mr. Kent as to causes of failure in examples shown.

Dr. Fullerton showed a small apparatus with which he had taken some successful photomicrographs.

Messrs. Corbould and Seyd also took part in the discussion.

In his reply, Mr. Kent pointed out that the prolonged exposures instanced by Dr. Mummery must necessarily greatly increase the chance of injurious vibration, and recommended a shortened exposure and a more brilliant light. The same thing applied to the very long exposures given by Dr. Clifford Mercer. It was explained that it was quite impossible for Dr. Bousfield to judge of the roughness or otherwise of the vertical apparatus without actually seeing it; and as for his complaint that not a single sharp bacillus had been thrown on the screen, it was entirely beside the point, as the slides of bacilli had been selected in consequence of their being out of focus, owing to various causes, and were shown to illustrate that very defect. Mr. Kent said he had worked with both horizontal and vertical apparatus for the past ten years, and for general work strongly recommended the vertical apparatus described in the paper. He entirely failed to understand Mr. Pringle's criticisms of the slides shown, as it had already been sufficiently explained that they were shown as illustrations of faults, and by no means as good photomicrographs.

"AN OUTSIDER" ON LANTERN SLIDES.

To the BULLETIN:

OUR Blizzard turns out to be a very mild kind of a storm after all. In the matter of judging the quality of lantern slides, he says that he does not think that showing lantern slides, made by different processes, upon the screen by means of the optical lantern, is a fair way of judging of their quality. Now, as slides are supposed to be made for the purposes of exhibition in this way, one would suppose that this would be the best of all ways to learn their qualities. Probably he will object to the old proverb, which says that "the best proof of the pudding is not chewing the pudding-bag strings." He does not think that a "dry" and "wet" slide by the same operator—and the operator, in this particular case, happens to be a consummate workman in both lines—and from the same negative, thrown on the screen at the same time, is a fair test of the two methods of working. It strikes him as "ridiculous a piece of work as can be attempted." Well, it may be to those within the inner circle. But to the outsiders who have only their eyes and the result to judge by, there is lots of fun in this talk about the superiority of one process over the other. He will have the question decided by an appeal to the editor, I suppose. But how will the editor decide, except by his eyes and the appearance he sees upon the screen? But the Blizzard veers a point. His new question is, "How does the average negative made to-day on dry plates compare with wet-plate negatives made prior to 1881?" In other words, he proposes to let the lantern-slide question go to the dogs and try a new line. Now, that it is just about where that meeting sent it. Well, let it stay, since one cannot decide from the use of the eyes which is which. The audience the other evening laughed and made up their minds that the question was one of those things, "no fellow could find out." They had all the proof they wanted that an expert could make slides by either the wet or dry process, and have the results altogether beyond the criticism of other experts.

Now, let me answer his other little conundrum in several ways, and I will not fall into the neat little catch he has put in it. Any average expert who made negatives by the wet-plate process before 1881 and is now working dry plates,

is producing as good or better work than he did then. The expert work of to-day is more perfect than it was then. The general average of photographs made by experts now from dry-plate negatives is higher in quality than it ever was for wet plates. Of those who were not experts and used the wet-plate process, the number was too small to be worth considering, and their work was too bad for any of it to be in instance to-day. It was far below that of the amateur of to-day, not even excepting the "press-the-button fiend." Now, these statements, which any one with eyes can verify and which the public and all outsiders know to be true, ought to satisfy our friend. These facts are as easily proved by the old albums as Professor Elmendorf proved, the other night, that among a dozen of his good slides experts could not tell by what process they were made by looking at the results on the screen. Professor Elmendorf was one of the men who was "in it" in the wet-plate days, and so was President Newton and Dr. Mason. If they had done as well in wet-plate days as they have in these last days, then, certainly, no one knows what photographers are aiming for.

Now, we come back to the case of the slide again. Mr. B. says he wants detail. Well, that is correct—then "sharpness" and "roundness" and "softness," and all the other "nesses." By that I suppose he means haziness and fuzziness, fogginess, and the general "mussiness" so much preached by a certain class of the shining lights.

Really, his sentence does not look very promising. Perhaps it is underdeveloped. Let it go! But when he says that to "get the sharpest results" "you require a film almost immeasurably thin," he is getting his lens mixed up with his chemicals, etc. What has the film to do with it? We get sharp images on paper half an inch thick when the paper is the only film we have. He has to prove something before he can make such statements and have them pass. Now, I can give him a little information, which he ought to have had before he wrote. The photo-mechanical people have used the wet process, not because of the thinness of the film, but because they must have an opaque negative, and by repeated intensification they can easily produce that result with wet plates. Thick images are sometimes built up to such an extent that the intensification actually fills up fine lines by going over the edges and "building up" horizontally.

The next sentence is probably badly fogged. Does our Blizzard suppose that at the famous "circus" the slides were by different men? They were all by one man, who works both wet and dry plates with equal facility. By either process he produces work which is far beyond fault-finding. Here is just the point of the whole argument: A. Blizzard has an idea. He thinks he made better negatives by the wet-plate process than he can upon dry plates. He looks at his old negatives, old slides and old prints and compares his own expert work with that of the amateurs of to day, who do not, perhaps, have a year's experience. He says, "I can make vastly better work than they do." He says, also, "I would like to see what kind of a slide that 'Outsider' can make. I know I can beat him." A very good way of dodging the point in question, for "Outsider" is not a professional. He does like the fun of hearing the "wet" and "dry" semi-professionals boast of the superiority of this or that method of making slides. It is especially funny when these same men cannot to save their souls tell the process by which any good slide has been made. At least, there is not certainty enough in their knowledge to prevent them from

raising a smile from those who do not care. Because A. Blizzard cannot make a first-class slide upon a dry plate, it does not prove that better slides than he ever made have not been produced on such plates.

Not very long ago an eminent amateur at a public meeting expressed some radical notions in regard to the way slides should and should not be made, and the methods of development that should be employed. The unfortunate feature is, that this would-be authority cannot make a slide which will give a first-class picture upon the screen.

The moral of all this seems to be in times like this—better let the artistic public say which plates make the best lantern slides. Telling them which is best will not convert their eyes. It may be a pleasant and harmless amusement. But when the results on the screen are against you, the laugh will not be in your favor.

OUTSIDER.

LANTERN SLIDES—WET OR DRY?

DEAR BULLETIN:

IN your issue of October 22d, page 638, I notice that in the report of the meeting of the Photo Section of the American Institute the following appears: "Abe Lizzard offers to send a negative and slide from same, and presumably expects to find the wet-plate slide proved the superior. The following resolution was offered concerning Abe Lizzard's letter: 'That the challenge issued by Abe Lizzard be accepted by the Photo Section of the American Institute, and that gentleman be invited to take steps necessary for the fulfillment of his challenge.'"

What was the challenge? Upon reading my letter as published in your issue of September 24th, I find I said, "How does the average negative as made to-day on dry plates compare with the wet-plate negatives made prior to 1881? Bring out the negatives and show them. I have some I will send to such an exhibition made by no matter who, and for fineness of delineation, or keenness of detail, coupled with roundness or softness (call it whichever you please), I will let them compete with any dry-plate negatives that can be shown."

If this is the challenge I issued, I send you a few negatives of the class I refer to. In doing so I am sorry to be obliged to state that many years' handling, and the many lantern slides I have made from them, have scratched a few, and I will also confess I have not been particular enough in caring for them, as they stood on a shelf unprotected from dust, or even by paper between them.

My proposition was directed more to Mr. (or Mrs.) Outsider, and I spoke about allowing your "outsiders" to copy either by contact or by aid of the camera, and wet or dry process. Then exhibit the pictures and allow me to be one of the audience to hear what "Outsider" has to say about them. I cannot find that I said anything about making slides myself from the negatives and exhibiting them. This is what I want others to do—to put a private mark on each which will enable them to recall the process by which same was printed, and let the audience, or those among same who feel capable of doing so, judge from the appearance as to the mode of printing. Now, mind me, I am not crying down dry-plate negatives, or slides, but merely stating what I honestly believe as regards the comparative results, not taking into account the greater ease by which the dry-plate negative is produced, and the slide printed by contact. If

simplicity of process is to be taken into account only, why, give me the dry plate every day in the week. The finest piece of mechanism requires more skill and labor than the more roughly finished one. The large steam-engine with its ponderous parts may excite more wonder than the very small counterpart in a small case by its side, but that same small case may contain the small model much more finely finished, taking several times to make it what was required to complete the larger one, and excite tenfold the admiration shown by the witnesses of both. It is quality, and not quantity, that should be our aim, and the few pictures that show in themselves the care and labor that must have been employed in their production are far more worthy of praise than the many square feet of wall covered with ordinary work, such as "any other fellow" could produce.

Any one who has worked for years in the wet-plate process knows full well the many ups and downs there are connected with producing fine results. The collodion must be just right in quality, decanted very carefully, to avoid comets and specks in the negative. The silver bath must be tended and nursed with the greatest of care, sunned, filtered, strengthened, acidified or neutralized, and the developer—just think of the many styles used, to say nothing of those recommended. Then, intensifiers by the dozen, fixing, drying and varnishing. Why, it was the very knowledge that to produce good work that everything was manipulated with the greatest care, or all the time and labor would be lost. How is it now? Many go out with satchels full of holders loaded with dry plates, bang away, and often will say, "Fear that last was not just right, so will take another shot at it to make sure," and so it goes until the procession ends, or the supply of plates does. Then comes development. Here he says, "Guess I will take a large tray, and put in as many as I can, and that will get them through in less time." In they go, and the developer is poured on. Well, there is no use detailing the results, other than if he gets from one-third of them negatives that will make a fair picture, it is all he wishes. I quote the foregoing from what has been told me in conversation, or what I have overheard said to others. Such belong to those who desire to cover the square feet on the wall, and not confine themselves to a few results that show the care and labor exercised in production, and, knowing this, meeting such people constantly, what can be expected? Had they lived in wet-plate days, they would never have attempted photography. They belong to the "You push the button, and *we will do all the rest*" class, a sort of grinding-out-by-the-hundred-mill, with the hope that something may be made out of them. It is only by exercising patience and perseverance that we can attain the best work or the high pinnacle, and more labor was necessary in producing one really first-class wet-plate negative than is used now in a dozen dry-plate negatives. Now, in regard to the negatives I send, will you please have some of the "outsiders," as the Photo Section of the American Institute are pleased to call themselves, make one slide from any one or each of these negatives, and, when all are ready, exhibit them, showing the difference between slides made by different parties from the same negative, and if they can make same by both wet and dry processes, so much the better. All I ask is, be careful of the negatives, as they are valuable (to me), if only as mementoes of an art of days gone by, over which the present has not shown improvement in quality.

Yours truly,

ABE LIZZARD.

WORLD'S COLUMBIAN EXPOSITION, CHICAGO, ILL.

OCTOBER 25, 1892.

To Editors of Anthony's BULLETIN :

GENTLEMEN,—Hand cameras using plates up to and including 4 x 5 inches, without tripods, will be allowed within the grounds of the World's Columbian Exposition on and after this date, on payment of a fee of \$2 in addition to the regular price of admission for each day.

Cameras using stereoscopic lenses will not be admitted, however small the plate may be.

Very sincerely,

C. D. ARNOLD, *Official Photographer.*

ANOTHER ANSWER TO "A TOUCHING APPEAL."

Postmarked "BERMUDA,"

October 13, 1892.

ARTHUR H. ELLIOTT, Esq.:

Sir,—I notice your call to "A Touching Appeal," with regret that so little attention has been paid to it. I have no acquaintance with the gentleman, but the BULLETIN *asks it*, which is enough for me. And if all photographers would abstain for one day from a few things they could do without, they could help. Enclosed I send you \$2, the result of one day's self denial of my family. Only six subscribers in five editions of the BULLETIN, does not speak well for your last appeal.

"Are there no more who are willing to give?"

Do not close it! Ask once more! There is a record kept!

The above letter, with \$2 enclosed, was duly received, unsigned. We shall be glad to acknowledge the receipt of many such letters.—EDITORS.

OUR ILLUSTRATION.

DURING the last exhibition of the New York Camera Club we noted some uncommonly fine work in orthochromatic photography done by Mr. W. A. Fraser. At that time we wished that all the readers of the BULLETIN could have an opportunity of seeing those handsome pictures, and we determined to persuade the artist to allow us to use one or more of his negatives. To that proposition Mr. Fraser very kindly agreed, and the result is the frontispiece of this issue of the BULLETIN. We have never seen any work upon flowers that surpassed the beautiful Heliotype reproduction with which we illustrate this number of our journal. It is perhaps impossible to give the full value of the exquisite negative from which the picture was made in anything but aristo or albumen paper; nevertheless, the work of the Heliotype Company comes very close, indeed, to a facsimile of the original print in the exhibition. This is only one of a very beautiful series of studies by the same worker, and we owe him our sincere thanks for his kindness in lending us such precious negatives. We hope our readers will find food for thought in this fine example of orthochromatic photography, and strive to give this phase of the art the attention it deserves, but gets far too slowly.

ANTHONY'S
Photographic Bulletin.

EDITED BY

Prof. C. F. CHANDLER, Ph.D., LL.D.,

Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.,

and a corps of practical assistants.

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E. & H. T. ANTHONY & CO., Publishers.

THE PHOTOGRAPHIC SOCIETY
OF PHILADELPHIA.

A STATED meeting of the Society was held on Wednesday evening, October 12, 1892, the *President*, Mr. JOSEPH H. BURROUGHS, in the chair.

Mr. Frederic E. Ives read a paper on the "Heliograph," exhibiting the apparatus, and also the special camera in which the negatives, with the necessary triple image taken through a single lens, were made. The wonderful results shown excited the highest admiration and favorable comment from the members present, and, at the conclusion of the paper, the following resolution was offered by Mr. G. M. Taylor, and carried unanimously:

3. *Resolved*, that the thanks of this Society be extended to our fellow member, Mr. F. L. Ives, for his paper just read, descriptive of further improvement in his wonderful and scientific inventions of camera and heliograph. *one vote for reproducing the natural colors in a photographical picture.*"

Dr. C. L. Mitchell showed a portable

divided hand camera, made by Ross & Co., of London. Its principal feature of interest and value consisted in its being provided with a pair of matched lenses, one of which was used as a finder projecting an image on a ground glass the full size of the picture about to be taken with the other lens. This arrangement enabled the picture to be carefully focused practically at the instant the exposure was made.

Mr. Wm. H. Rau gave a demonstration of the process of making bromide enlargements, using the new apparatus belonging to the Society, in connection with the Weisbach Incandescent Gas Light. In order to overcome the jarring occasioned by heavy machinery in other parts of the building, it was necessary to construct the apparatus with this end specially in view. The stand supporting the apparatus, with the exception of the condensing lenses, rests upon four springs of pure india-rubber. To counteract any motion which might pass through the springs, weights aggregating about 300 pounds rest on the framework of the stand. A second frame is supported on top of the stand on another series of six springs, about 100 pounds of iron weights being placed on this frame. The enlarging camera and board for the paper are rigidly attached to the upper frame. By this contrivance the vibration is entirely overcome, perfectly sharp work being done while the machinery is in active operation.

The Weisbach light used, as described by Mr. Miner, representing the company, consisted of a special burner devised for photographic work, giving a highly actinic light of 175 candle power. By the use of a parabolic reflector, the effective power of this light was greatly intensified, having been estimated at 600 or 700 candles. The burner was claimed to use but about 5 feet of gas per hour, making it a very economical light for the purpose as well as a very convenient one, as compared with any form of electric light yet devised.

Mr. Frank S. Lewis mentioned that in developing film negatives lately he had noticed that on lifting them out of the tray for examination, at the points where the back of the film rested on the fingers, the heat of his hand seemed to be communicated through the film so as to accelerate the development at those points. This was particularly noticeable in the skies of the negatives. He had also noticed that with some plates the strong contracting and adhesive power of the gelatine had caused it to pull off part of the outer surface of the glass around the edges of the

plate. This seemed to be due to the glue-like character of the gelatine used, and illustrated the process largely used for producing a peculiar rough surfaced glass for decorative purposes.

A member asked why in the case of an interior view, which had an hour and a half exposure, a streak of sunlight which could be assumed to be greatly over-exposed, had developed intensely black, instead of giving the thin image generally resulting from over-exposure.

Dr. Mitchell thought it came from a second reversal of the image at that point, the usual thin image of over-exposure being again reversed and showing black.

Mr. C. W. Miller said that if an over-exposed negative were developed long enough, it would become black all through, as with the streak of sunlight. But, usually with such negatives, they were soon found to be over-exposed and the developer modified accordingly, the development being stopped before intense blackness was reached.

A member stated that in photographing in Florida, the Yellowstone Park, and other places where the sky was intensely bright, the skies were almost always overtimed and thin, and asked for a remedy.

Dr. Mitchell suggested holding the sky back with a color-screen and orthochromatic plates.

Mr. Carbutt recommended washing the plate off when the sky had reached the proper intensity in developing, and then with a tuft of cotton or soft brush continuing to apply the developer to the foreground until a harmonious result was obtained.

Mr. Ives practiced another method, which was to reduce the over-developed portion of the negative with Farmer's Solution applied in a similar manner to that recommended by Mr. Carbutt. This he did after fixing, and in daylight, which was quite an advantage.

Dr. Mitchell spoke in high terms of some interior views in the Alhambra, taken by Mr. Cembrano, Secretary of the late Photographic Convention, held in Edinburgh. These pictures had the strongest possible contrasts of light and shade, and he understood they had been developed on the plan described by Mr. Carbutt.

Adjourned.

ROBERT S. REDFIELD,
Secretary.

PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN.

A MEETING was held in the room of the Society on October 25th, Mr. T. R. DALLMEYER in the chair.

A photograph of Mont Blanc taken from Geneva, by M. Boissonnas, was placed on exhibition, this photograph showing even finer detail than is shown in the picture at Pall Mall.

Mr. Dallmeyer pointed out that in tele-photographic work the slight unsteadiness incident even to the best stands is often the limiting condition for definition, and this photograph was taken on a specially clear and calm day.

Mr. Cembrano made some remarks on "Architectural Photography," and illustrated his subject by a series of lantern slides. As regards the apparatus, he strongly recommended a tripod with sliding legs, but the tripod should not be much higher than an ordinary observer, and he deprecated setting the tripod up on a scaffolding. The camera with a square bellows is desirable, especially from the point of the rising front. A square back is desirable so that the draw-shutter can be pulled out from either side if desirable, as sometimes the side of the camera has to be set close against a wall. The Ross concentric and the Zeiss anastigmatic lenses were well spoken of, and the desirability of taking a level was emphasized. A combined level and plumb-rule, 6 inches long, was shown as convenient, as it can be held against any part of the camera. Backing is of prime importance, but abundance of silver in the emulsion is a matter of desirability. Sometimes, when only a short exposure could be given, owing to an approaching service, he found it desirable to finish the exposure with a large diaphragm; for example, in one instance he had commenced with a stop of $f/45$, and finished with a stop of $f/16$. He often found it desirable to partly develop certain subjects with a brush, giving special attention to the deep shades. This method is of value when one has to photograph a covered part of a building and an uncovered or out-door part together. The quarter-plate camera was recommended to the tourist, as the lantern is one of the best means of exhibiting architectural photographs.

Mr. Chapman Jones made some remarks on curing such distortion as arises from tilting the camera, and illustrated his remarks by lantern slides. A square, divided up into smaller squares, was photographed on a sloping plate, so that the scale of one part was reduced, and one pair of bounding lines were shown as out of parallel. The negative was now so copied as to restore the parallelism of the lines but if this is done by sloping the first negative, the scale in one direction is reduced; if, on the other hand, the sensitive plate used in making the corrected copy is sloped, the want of parallelism is equally corrected, but the scale is now extended in the

"Does your father keep horses?"

"Well, not exactly, but he has the night-mare regularly."

direction where it was previously reduced. The problem is to so apportion the slope of the negative to be copied, and of the plate on which the copy is to be made, as to make all parts of the scale true, and empirical rules had been given for this, but the subject requires mathematical investigation.

Mr. Cembrano commented on the distortion which arises when the swing-back is used.

Mr. Dallmeyer agreed with Mr. Cembrano, that from the pictorial side it might be important not to take the high point of sight, but from the purely architectural point of view it may be convenient to raise the camera on a high stand or a scaffolding. He reminded Mr. Cembrano that when the plate is vertical, true monocular perspective is the result; but as a remedy for that strained perspective, which necessitates looking at a photograph from a very definite point of view, he recommended the use of a long-focus lens.

COLUMBUS CAMERA CLUB.

Last May the Columbus Camera Club moved into new quarters specially constructed for them in the Young Men's Christian Association Building.

The move was judicious, and, notwithstanding the predictions of some of the members that the expense was greater than the club could support, there has been a continuous increase in membership and income. The exceptional facilities for the pursuit of photography have attracted many photographers that otherwise would not have joined us. There are now about sixty-five active members, and the number increases rapidly. They include not only amateurs, but professionals, ladies and gentlemen. The ladies have added much to the interest of the meetings, and are active and enthusiastic in everything pertaining to the club's welfare.

In the prize print contest, the awards for which have just been announced, a large number of meritorious prints were entered, and the judges, Messrs. Martin, Bentz and Persche, had considerable difficulty in arriving at their decisions. Although prizes were offered only for the best landscape, figure and instantaneous picture, they selected three pictures in each class, and gave them first, second and third place in the order of merit.

The awards were as follows :

LANDSCAPE.—*First*—View on Alum Creek, by Mr. E. Huffman. *Second*—"The Deserted Mill," by Mr. W. B. Kimball. *Third*—"View on Ohio State University Grounds," by Prof. J. N. Bradford.

FIGURES.—*First*—"Clover Leaf," by Miss Hetty Gatz. *Second*—"The Stepping Stones," by Mr. E. Huffman. *Third*—Group of bull terrier puppies, by Mr. F. H. Howe.

INSTANTANEOUS.—*First*—Street view, by Mr. F. H. Howe. *Second*—"Don't Tickle Me," by Mr. F. H. Howe. *Third*—Barnyard view, by Mr. C. Doty.

The prizes were a Mathews' Special W. A. Lens for landscapes, half gross of 5 x 7 plates for figures, a year's subscription to a leading photographic journal for instantaneous.

Professor Joseph N. Bradford, of the Ohio State University, and Prof. Tight, of Denison University, have been appointed a committee of the Ohio Academy of Science to secure photographs of all objects of scientific interest throughout the State, and have issued a request to all photographers to contribute. The Committee will arrange the photographs and prepare a report for the next meeting of the Ohio Academy of Science. The photographs and report will be preserved and will constitute an important record of the scientific features of Ohio. The State is peculiarly rich in objects of scientific interest, and it is expected that amateur and professional photographers will lend their aid to this important work.

SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

In order to encourage our members to do new work, entirely the product of their own hands, and to stimulate them to trials of novel printing processes, it is proposed to hold a series of annual competitions for members only; the first to be held in our rooms about March 15, 1893, and to be entitled "First Annual Members' Exhibition of Photographic Work."

Exposure, negative and print, in fact, everything except mounting and framing, must be the sole work of the exhibitor. All pictures must be mounted, and, if possible, framed. The Committee prefer that all pictures be mounted and framed separately, in order to facilitate judging, which will be on individual prints and not by sets. Names of exhibitors will not be allowed on pictures or frames, on which nothing should be displayed but the number or title. Prizes will be awarded at the discretion of the judges, but no awards will be made unless the work comes up to the required standard, which will be high. The Committee reserve the right to reject any picture, or series of pictures, at their discretion.

The judges will be chosen outside of the Society, but they will be required to judge, not only for artistic qualities, but also for photographic technical excellence.

Prints which have taken prizes in other exhibitions will be barred from competition but may be exhibited, the idea being to promote the production of new work.

There will be five classes in the competition, as follows:

Class A.—Landscape and Marines.

Class B.—Figure Subjects, including Portraiture.

Class C.—Architecture, including Interiors.

Class D.—Hand-Camera Work.

Class E.—Transparencies, including Lantern Slides in sets of six.

There will be an entrance fee of fifty cents charged for each class. Any competitor may enter in any or every class. Entry forms and particulars may be obtained by application to any member of the Exhibition Committee at the rooms.

The Exhibition will be opened at the rooms of the Society, No. 113 West 38th street, on March 15, 1893. Entries will close February 23d.

All pictures for exhibition must be delivered at the rooms, charges prepaid, before the first day of March.

Respectfully,

ALFRED STIEGLITZ,

C. C. ROUMAGE,

T. J. BURTON,

H. T. DUFFIELD,

WM. M. MURRAY,

*Committee on Members' Exhibition
of Photographic Work.*

OCTOBER 20, 1892.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. Correspondents will please remember this. No attention will be paid to anonymous communications.

Q.—H. H. writes: Where do you get the vertically grooved hard-rubber baths for fixing solution mentioned on page 515 of your issue of 10th September and what is the price of the $\frac{1}{4}$ size ($8\frac{1}{2} \times 6\frac{1}{2}$). I develop dry plates with pyro, put them in chrome alum and citric acid clearing bath, then a hypo. Can you tell me why it is the hypo bath turns milky white and the plate comes out riddled with transparent

spots and holes in the film? It is not from dust or air bubbles in the developing bath I am quite sure.

A.—Our publishers can supply you with these baths and we would advise you to write them for a quotation. The citric acid in your clearing bath decomposes the hypo and liberates sulphur which gives the milky appearance you speak of. This bath is probably too acid and consequently causes the transparent spots in your negatives; make up a fresh one with very little acid in it and see if your trouble will not disappear.

Q.—W. F. U. writes: About a year or so ago there appeared in the BULLETIN, Mr. Robinson's formula for development of dry plates. It was the pyro and ammonia.

I had it pasted up in my darkroom, but had the misfortune to have it singed by the porter, so that it is not possible to see the quantities of the mixture.

Could you oblige me with the formula for the developer. I would feel very grateful for the information.

A.—We think the following is the one to which you refer:

No. 1.

| | |
|------------------|------------------------|
| Pyro..... | 1 ounce. |
| Citric acid..... | 40 grains. |
| Water | $7\frac{1}{2}$ ounces. |

No. 2.

| | |
|------------------------|-------------|
| Bromide of potassium.. | 120 grains. |
| Ammonia 88o | 1 ounce. |
| Water | 7 ounces. |

For use, add 3 ounces of water to 2 drams each of Nos. 1 and 2.

Q.—I. P. R. writes: Suggest in BULLETIN, proper procedure for one contemplating the study of "celestial" or astronomical photography. Writer has a 5-inch telescope and is desirous of reproducing Jupiter, the moon, etc.

A.—Write to the directors of some of the larger observatories or colleges, and they will undoubtedly furnish you with the information you desire or recommend some text book which covers the ground.

Q.—W. J. M. writes: What is the best thing to do with a camera bellows which has become perforated with a large number of small holes, making it leak a great deal of light? I get over the difficulty by wrapping several thicknesses of rubber cloth over the outside, but that does not look very well and will keep coming off.

A.—You can recover your bellows with a cloth that comes specially for that purpose, or

if not too badly gone you can patch the holes with a mixture of india rubber and lamp-black dissolved in naphtha. An easy way out of the difficulty is to make your focusing cloth into a bag which will fit entirely over the camera and fastened around the lens tube with a drawing string. A hole must, of course, be cut out for the tripod head.

Q.—W. B. writes: Will you kindly tell me the process used in putting a picture upon the inside of a watch case on the opposite side of the case to the face? It resembles a film, but no trace of it can be seen. The gold seems to shine through the picture.

A.—Either the carbon process or stripping films are adapted to this kind of work. Which is used, or the exact details of the process, we cannot inform you, as it is known to but few, and is somewhat closely guarded.

Q.—J. H. C. writes: I have been deeply interested in that most valuable series by Walter E. Woodbury on collodion as a substitute for albumen in positive printing in the BULLETIN, May 14, 1892, page 274. I don't wish to go to the trouble of preparing the collodion myself; can't I buy this same quality of collodion at the dealers? What name has it?

A.—Any manufacturer would probably make it up for you if you gave him the formula, and we doubt not that our publishers could supply you with it, even if they do not have it in stock.

Q.—W. H. W. writes: I have a Hawkeye 4 x 5, fitted with a Darlot Rect. lens. Can you kindly tell me through your Question Department what the speed of the shutter is

for the three stops, and also the angle embraced by the lens?

A.—The speed of the shutter is dependent on the strength of the spring, and as this varies considerably for different cameras of this make it would be impossible to answer your question. In "Editorial Notes" for this issue you will see a simple and reliable method for ascertaining the speed of any shutter, and would advise you to try it. For a similar reason we cannot answer your last query.

Views Caught with the Drop Shutter.

A. W. E. MACCOLLIN has recently opened a photographic studio at 408 Market street, Chester, Pa. Mr. MacCollin was formerly with Griffin & Company, and we wish him success in his new venture.

WE note with pleasure the establishment of Miss D. M. SNYDER at 259 Carroll Street, Brooklyn, where lessons are given in the retouching of negatives, and negatives are retouched for amateurs and the trade generally.

SPOKANE, Washington, is to have a new studio at 816 Riverside avenue. It is owned by Mr. W. A. Grossman, and the plans for furnishing and decorating are very elaborate.

WILL Mr. A. R. Everton, photographer, please send his address to T. C. Roche, 591 Broadway, New York.

TABLE OF CONTENTS.

| | PAGE | | PAGE |
|--|------|--|------|
| A USEFUL BATH, <i>by A. E. Douglass</i> | 654 | PRACTICAL PHOTOMICROGRAPHY, <i>by</i> | |
| ANOTHER ANSWER TO "A TOUCHING | | <i>Mr. A. F. Stanley Kent</i> | 660 |
| APPEAL"..... | 667 | SOCIETY OF AMATEUR PHOTOGRAPHERS | |
| "AN OUTSIDER" ON LANTERN SLIDES, | | OF NEW YORK..... | 670 |
| <i>by "Outsider"</i> | 663 | THE HAND CAMERA AND ITS ABUSE..... | 641 |
| COLUMBIUS CAMERA CLUB..... | 670 | THE MANIPULATION OF CHLORIDE OF | |
| EDITORIAL NOTES..... | 643 | SILVER GELATINE PAPER, <i>by Edwin</i> | |
| LANTERN SLIDES—WET OR DRY? <i>by Ahe</i> | | <i>Underwood</i> | 657 |
| <i>Liberal</i> | 665 | THE PHOTOGRAPHIC SOCIETY OF PHILA- | |
| LETTER FROM FRANCE, <i>by Leon Vidal</i> | 650 | DELPHIA..... | 668 |
| LETTER FROM GERMANY, <i>by Dr. H. W.</i> | | TONING PLATINUM PRINTS WITH URAN- | |
| <i>Vogel</i> | 646 | IUM, <i>by F. Fitz Payne</i> | 656 |
| ON DIAPPOSITIVES, <i>by P. C. Duchochois</i> | 653 | VIEWS CAUGHT WITH THE DROP SHUT- | |
| OUR ILLUMINATION..... | 667 | TER..... | 672 |
| OVER EXPOSURE: A RATIONAL METHOD | | WHAT OUR FRIENDS WOULD LIKE TO | |
| OF ORTHOSCOPICATUM..... | 655 | KNOW..... | 671 |
| PHOTOGRAPHIC SOCIETY OF GREAT | | WORLD'S COLUMBIAN EXPOSITION, CHI- | |
| BRITAIN..... | 669 | CAGO, ILL..... | 667 |

ANTHONY'S

Photographic Bulletin.

EDITORS :

PROF. CHARLES F. CHANDLER, PH.D., LL.D.

PROF. ARTHUR H. ELLIOTT, PH.D., F.C.S.

VOL. XXIII.

NOVEMBER 26, 1892.

No. 22.

EXHIBITION OF PHOTOGRAPHS AT THE AMERICAN INSTITUTE FAIR.

LAST November we had occasion to congratulate the managers of the Institute on the high standard of the photographic exhibit at their Fair. This alone was well worth a special visit, and we believe contributed in no small degree to the success of the whole Fair. It is with considerable surprise and regret that we notice the comparatively poor display made this year. Poor, not in quality, but in quantity. Nothing catches the eye, rivets the attention and advertises an exhibit better than a good assortment of photographs, and we must confess that it seems astounding that, after last year's success, so meager a collection of prints should be presented this year. We miss the exhibit of the Society of Amateur Photographers, we look in vain for the work of Dana, for the Cramer Company, for Roesch Bros., for a half a dozen of last year's exhibitors. Whence this falling off? The general average of work in New York and Brooklyn is higher than previously; business, from all accounts, has been good. Perhaps our friends the managers have not been persistent enough in their endeavors to persuade photographers to come forward and exhibit.

The exhibition of the Society of Amateur Photographers last year was such a success and suggested such possibilities that we wonder the Institute did not seize the opportunity, offer a prize, and conduct an exhibition of amateur work this year under its own auspices. This would have been very popular and would be assisting our art. We offer the suggestion to them and hope to see something of the sort next year. Photography plays so prominent a part in our daily life that too much cannot be done for its advancement by all our educating bodies.

Taking the work exhibited this year, we repeat that in quality it compares very favorably with that of last year. Frank E. Pearsall exhibits his "Knarphotographs," and a crowd may always be seen around these, admiring the softness of

the prints and the artistic methods used in mounting. Mr. Pearsall has a good thing in these knarphotographs.

An exhibit, claiming more than passing notice, is shown by Wilhelm, of Madison avenue, New York. Both cabinets and large panel pictures are shown, reflecting great credit on this photographer.

C. D. Fredericks has a large exhibit. His crayons, pastels and aquarelles being unusually fine. Of the cabinet pictures, it is only fair to say that these are excellent in lighting and general effect, but albumen paper hardly does them justice.

Robinson shows a large display of cabinet pictures and some very good panels. Ninety-nine cents a dozen seems a very low price for cabinets, but if all the products are equal to those shown, the purchaser makes by no means a bad bargain.

Tanqueray has a display of large heads and crayons which are good. De Young's plain prints are exceptionally fine, and this well-known worker in oils, pastels and crayons shows examples of such work that will largely advertise this, one of his specialties.

Near the entrance the Couleur Glacé Company has a number of colored glacés which are pretty and interesting. Near by, the Iota Celluloid Transparency Company show samples of their work. These are printed in daylight, and toned and fixed like aristotype paper. Mounted between glass they make very pretty transparencies.

The photo-engravers of New York have only one representative, the Alley-Allen Company. It is to be regretted that more of this work is not shown. In the body of the hall, Mr. W. Radam shows several really good photo-micrographs and enlargements. Mr. Radam has not been practicing photography long, but his results show remarkable energy and perseverance.

Regarding the apparatus exhibited in connection with photography, a tour around shows many things that may be applied to our advantage. One of the novelties shown among the electrical exhibits is the electric sand for batteries, and, in connection with this, an electric lamp for the examination of the throat. With a little modification this lamp might prove valuable in the photographing of the larynx. An arrangement for heating rooms by a cover for the gas or lamp might prove useful in some of our studios. An assortment of fancy iron lamps, and similar articles, should be seen by our professionals, and their adaptability as studio accessories considered. Coming to photographic apparatus proper, the Scoville & Adams Company have an interesting exhibit of hand and tripod cameras, tastefully arranged, and worthy of more than passing notice. Further down in the hall, Messrs. E. & H. T. Anthony & Co. have a large display of cameras, and every photographic requisite. The center of the exhibit is formed by large pictures on American Aristo paper artistically set off by unique mounting. Among the novelties shown are the Retocador, an electric retouching apparatus well worthy of attention; the Perfection Trimming Board, a boom to every worker; the 5 x 7 Folding Hawkeye, fitted with Bausch & Lomb's diaphragm shutter, a model of perfection and compactness; the Kamaret and Petite Kamarette, the smallest film cameras on the market; the Thornton, Pickard and Low shutters, and an assortment of the very latest things in tripod cameras and photographic accessories.

The whole exhibition, while lacking in number of exhibits, is indeed a notable one, and well worthy of a visit from every photographer.

EDITORIAL NOTES.

A NEW developer has been recently introduced to the public under the name of Glycin. It is obtained by the action of chlor-acetic acid on amido-phenol, and is a pulverulent mass, readily soluble in water, to which a small quantity of alkali has been added. The solution thus formed is almost colorless, and keeps well by the addition of sulphite of soda. The following are two formulas suggested by Dr. Eder :

| | |
|-------------------------------|----------|
| Glycin..... | 5 parts. |
| Sodium sulphite (cryst.)..... | 15 “ |
| Potassium carbonate..... | 25 “ |
| Water | 90 “ |

For use, dilute with 3 to 4 volumes of water, or—

| | |
|--------------------------------|----------|
| Glycin..... | 3 parts. |
| Sodium sulphite (cryst.)..... | 15 “ |
| Sodium carbonate (cryst.)..... | 22 “ |
| Water | 200 “ |

Use full strength.

Glycin is a slow developer, giving exceptionally clear whites, and promises to be of use in photo-mechanical work.

PHOTOGRAPHY is playing an important part in the observations of the heavens. Besides the comet discovered by its aid at the Lick Observatory by Professor Barnard, two planetoids by M. Charlois, of Nice, and two more by Dr. Max Wolf, of Heidelberg, owe their discovery to the application of photography to celestial observations.

THE Newark Camera Club exhibited a set of slides from the “London Amateur Photographer” on the evening of November 7th, together with a number made by its own members. On the 18th the regular fall exhibition took place, and was largely attended. A feature of the entertainment was the introduction of music and singing.

WE note the agitation in favor of a road department, now being made, with much interest. A petition to this effect is being largely circulated, and will be presented to Congress in the shape of a memorial shortly after January 1st. It is hoped that a million signatures will be obtained, and that provision will be made for a permanent road exhibit, and for teaching students so that they may become skilled road engineers. May the movement meet with the success it deserves.

THE postponed regular meeting of the Society of Amateur Photographers of New York was held on Tuesday evening, November 15th, and was largely attended.

THE *pièce de resistance* of the recent exhibition of the Lowell Camera Club was a series of sixty-four of Mr. H. P. Robinson's pictures, loaned to them through the courtesy of the Boston Camera Club. Among those receiving especial attention were “Dorothy,” “Can I Jump?” “A Nor'easter,” “Dawn and Sunset,” and “Thinking of Jack.” Mr. Robinson's name is, of course, a sufficient guarantee of their quality.

ONE of our correspondents informs us that he uses No. 2 soluble cotton in place of gunpowder with great success. While this may be the case we can warn him, from personal experience in the intentional bursting of rifles with this agent, that it should be employed with great care, and that only microscopic fragments remain of a gun barrel burst through its use.

THE Detroit Lantern Club exhibited on the evening of Thursday, November 10th, a series of views of Mount Washington and vicinity, which were described by Mr. A. H. Griffith in one of his interesting talks, which was highly appreciated by the audience.

Professor C. V. Boys in a recent lecture gave several illustrations of what has been accomplished in instantaneous photography by the aid of the electric spark. One photograph showed an issue of liquid from a very small pipe, which to the naked eye appeared a perfect stream, but the picture produced by an electric exposure resolved it into a beautiful and regular series of drops. A picture of a rifle bullet passing through the air at a speed of 2,000 feet a second was also exhibited.

THE Orange Camera Club gave an exceedingly successful entertainment in its rooms on the evening of November 5th. Edward H. Graves gave a demonstration of the platinum process, producing some superb specimens. After this, there was an exhibition of the work of the Club and the new slides made by the members. The formation of a ladies' auxiliary club is contemplated and will probably be shortly carried through.

THE hand camera, we are informed, was largely used during the recent elections in San Francisco to photograph every man suspected of being a repeater at the polls. The developed negatives were then compared, and any two found to be alike would lead to the arrest of the culprit, as each photograph had attached to it the registered name and address of the voter.

AT the annual meeting of the New Orleans Camera Club, on November 2d, the following officers for the ensuing year were elected: President, E. L. Bowman; Vice-President, D. W. Longstreet; Secretary, R. E. Charles, Jr.; Treasurer, S. L. Mitchel. The directors are H. C. Delery, E. L. Pinoc, P. S. Benedict, W. W. Boullemet and James B. Quinn.

THE Worcester Camera Club has recently added to its outfit a large portrait camera, and is in a flourishing condition. It has a membership of sixty, and last month gave a very successful exhibition of club work, in which nearly one thousand pictures were shown.

THE St. Louis Camera Club has engaged the entertainment hall of the Exposition Building for a series of eight lantern exhibitions and lectures illustrating some of the noted cities and places in this and other countries. The former occasions of this kind were so favorably received that the large audiences could not be accommodated in its own quarters, and hence the new departure.

THE following is a list of the officers of the Chautauqua Photographic Exchange Club : President, Henry E. Canfield, Akron, O. ; Secretary, Mrs. C. L. Pierce, Elmhurst, Riverside, Conn. ; Assistant Secretary, Gould W. Hart, 849 Monroe street, Brooklyn, N. Y.

AT a recent exhibition of the Camera Club of London, H. Van der Weyde, exhibited for the first time a remarkable machine, called a "photo-corrector." But this machine he claims to correct on the negative such defects as abnormally large hands or feet, deficiencies in stature, etc., which so often irritate the variety of sitters. It may be doubted whether photographers will avail themselves of an invention which would seem to increase their responsibilities to such an alarming extent.

M. DEMENY has constructed an apparatus for the projection of a series of chromo-photographic slides. It consists of a revolving disc, bearing upon its outer periphery the slides, which are successively brought into the field with great rapidity. By its use the illusion of motion is perfectly reproduced.

WE note the advent of a clip for holding films in a vertical position in the fixing and washing baths, which will probably meet with considerable approval, as it does away with the abrasion so often produced when washing a large number in a single tray.

WE have just received a list of the officers of the Hartford Camera Club for 1892-93 as follows : President, Herbert O. Warner ; Treasurer, Fred. D. Berry ; Corresponding Secretary, Chas. R. Mason ; Secretary, Robert A. Wadsworth ; Executive Committee, the officers, with George L. Parmele, A. H. Pitkin and W. W. Walker.

WE have been favored with several communications from the Bolton (England) Photographic Society, from which we judge it to be in a very prosperous condition. Our cousins on the other side of the water are ahead of us in the number of their field days and club excursions, and this is a feature which it would be well for us to imitate.

WE wish to bid our new confrère, the "Canadian Photographic Standard," a hearty welcome in its field. It is published by H. Hogg, the well-known Montreal dealer in photographic materials, and bids fair to become widely known and appreciated.

THE manufacture of glass-lined tubes and pipes is now being extensively carried on in England. They are recommended for household service, as by their use no danger of lead poisoning can arise. The joints between the lengths are made with gutta-percha. It is evident that such pipes might be found of value in photographic establishments.

AT a meeting of the English Lantern Society, Commander Gladstone, the Hon. Secretary, showed a lantern of his own design, in the construction of which aluminium had been largely used. The total weight, including the car-

rying case and regulators, was 21 pounds, the weight of the one which it was constructed to supersede being 38 pounds.

WE would express our thanks to our genial friend, Mr. E. K. Hough, of Fredonia, N. Y., for the copy of his article on "Grape Culture" in the Chataqua grape belt, which he so kindly sent. It is full of valuable information, and shows the result of much care, study and experience on his part in this particular line.

AT the recent special meeting of the California Camera Club, Mr. E. Bausch, of the Rochester firm of Bausch & Lomb, gave, before a good-sized and attentive audience, an interesting and instructive explanation of the process of manufacturing lenses. A topic of this kind is always in order, and our amateurs cannot be too well informed on this most important subject.

A NEW IMPROVEMENT IN THE PLATINOTYPE PROCESS.

BY P. C. DUCHOCHOIS.

SINCE the early ages of photography the attention of experimenters has been directed towards finding a simple process by which permanent positive impressions could be attained, none of the silver-printing methods, either by development or the continuous action of light, yielding prints of certain permanency. Among the processes which were devised, Poitevin's carbon process and Willis' platinotype are the only ones which produce photographs that can be considered as absolutely permanent.

The carbon process is well known. In the hands of skillful operators it yields splendid proofs. But the manipulations are somewhat complicated, and for this reason the process has not been generally adopted. For the majority of amateurs it is, so to speak, out of the question.

There is, however, a modification of this process which renders it exceedingly simple; but then it can only be employed to reproduce designs in lines any white and black subject. It is as follows:

A sheet of albumenized paper is sensitized from the back by spreading over a 3 per cent. solution of potassium bichromate, which is allowed to penetrate through the paste of the paper. When dry, it is exposed under a negative for a few minutes; then, on the albumen surface one brushes, by means of a sponge, a thin coating of printing or lithographic ink, thinned with turpentine. When the turpentine is partly evaporated, which requires four or five minutes, the print is placed into cold water, and, after a period of, say, a quarter of an hour at the utmost, by brushing gently with a soft, wet rag, the albumen not acted on by light is washed out, and a proof, in greasy ink, is obtained, which only needs soaking in water to eliminate the bichromate from the paper and to obtain pure whites.

By the platinotype splendid proofs in half tones are obtained, provided the negatives are specially made for that purpose.

As originally devised by Willis, and improved by Pizzigheli and Hübl, who made a complete study of it, the process offered some difficulties, not on account of the photographic operations, but on account of the preparation of

the sensitizing compound ; and, therefore, the professional and amateur photographers preferred buying the paper already sensitized rather than to prepare it themselves; moreover, until lately the process was patented. Now it is public property, and already several improvements, to render the process entirely practical, have been published. Among them we find one not only very simple, but also economical, which Mr. Ganichot has communicated to a French paper, *La Science en Famille*.

This process is as follows:

To prepare the sensitizing solution 125 parts of dry ferric chloride are dissolved in 1,000 parts of distilled water, and the solution filtered. The iron is then precipitated as a hydrate by aqueous ammonia added in excess. This done, the precipitate is washed in five or six changes of water, thrown on a filter to drain, and then dissolved in a boiling solution of 50 parts of oxalic acid in 150 parts of distilled water by adding it in small quantities until the solution is saturated and there remains an excess of oxide; for, according to Mr. Ganichot, it is necessary that the solution be neutral and saturated.

After filtration $2\frac{1}{2}$ parts of sodium chloro-platinite are added, and the solution, being diluted to 250 parts with distilled water and filtered, is ready for use. If sheltered from the luminous action, that is, if kept in perfect darkness in a well-stoppered vial, it will undergo no alteration for a long time.

As usual, the paper for the platinotype process should be sized either by arrowroot or gelatine. We have used with success the coated paper employed in the collodio silver chloride process. It is easily found in this market and it is cheap.

The sensitizing should be done in the darkroom lighted by a yellow light, spreading the platinous mixture as equally and evenly as possible with a Buckle's brush.

It is important, says Mr. Ganichot, that the solution should not soak in the paper, else the image will be sunk in and without brilliancy. He also directs the suspension of the sensitized paper by one corner and allowing it to dry thus. This we find objectionable, and we advise the reader to desiccate the paper by heat as soon as it is surface dry. It is then ready for use.

Under a negative of ordinary intensity, the image appears rapidly. The image should be printed until it is visible in all the details, when the proof is removed from the printing frame and developed in the darkroom or by a very diffused daylight.

The development is made by immersion in a solution of—

| | |
|------------------------------|------------------|
| Oxalic acid..... | 25 parts. |
| Sodium chloro-platinite..... | $2\frac{1}{2}$ “ |
| Water..... | 250 “ |

The image appears rapidly, increases in intensity and (partly) loses the reddish yellow tint due to the ferric oxalate.

The sodium chloro-platine added to the developing solution is useful ; it gives up the platinum necessary for the complete formation of the image, the quantity held in the paper not being sufficient.

As in all the printing process, the development should be stopped when the image has acquired the proper intensity, for it loses nothing by the subsequent washings. Mr. Ganichot does not state whether the washing should be first done in an acid solution. But it is evident that it should be so, to entirely elimi-

nate the iron salt and thereby to obtain pure whites. Therefore we advise a preliminary washing in a 2 per cent. citric acid solution, twice renewed before the final washings in pure water.

This process, exceedingly simple and by no means expensive, possesses the advantages of yielding proofs without exaggerated contrasts, and, besides, states Mr. Ganichot, owing to the use of the sodium chloro-platinite the paper is not affected by dampness. In this we do not agree with the author: the salts of iron, notably the bichromates, act on organic matters even in the dark, and the photo-preparations in which they are present lose their good qualities in a certain period; moreover, generally the ferric salts, the oxalate, for instance, are always more or less hygroscopic, and dampness, as it is well known, should be avoided in the platinotype process. Hence it is advisable, not only to desiccate the paper soon after it is sensitized, as has been said, but also to keep it in a chloride of calcium box, similar to that used for silver albumen paper.

We must also observe that the platinum paper gives the best results when it is newly prepared, and, as the preparation is very simple and expeditious, it will be well to prepare only the quantity of paper for one or two days' use.

"Notwithstanding the constantly increasing price of platinum, the process is yet economical, for the quantity of platinous chloride entering into the preparation of the paper is small, so that the proofs, when finished, cost hardly one quarter as much as those obtained by the silver printing-out process, and they possess the inestimable quality of being unalterable."

[From *Photographische Nachrichten*.]

COLOR EFFECT IN THE PICTURE AND PHOTOGRAPHY.

BY F. STOLZE.

ALTHOUGH the reproduction of light and shadow as produced by ordinary photography is undoubtedly one of the greatest wonders of the nineteenth century, it cannot be denied that, even after the invention of color-sensitive plates, only one side of the visible world is reproduced, and that the want of color places the photographic picture in the background, not only in comparison with the colored printing in regard to natural truthfulness and cheerfulness of appearance, but frequently also, as will be shown below, in regard to the production of forms. It can be hailed, therefore, with the greatest pleasure, that the efforts to reproduce color with the aid of photography are gradually gaining more substantial shapes, and that there is well-founded hope that the great problem will be solved in the near future, not only theoretically, but also practically, in all its requirements, and in a satisfactory manner. Under the circumstances it is of great importance to obtain a clear idea about the color effects in the picture.

While the distribution of light and shade and the outlines of objects thus depicted, form, so to speak, the skeleton of the picture, the colors imbue it with lifeblood. A picture executed in one tone always remains an abstraction, while the colored picture conjures reality itself before our eyes. It might truly be said that the wonderful natural truthfulness of photography shows this opposition in a much stronger light. It shows itself—aside of the color—so

entirely as the unerring reflection of the outside world, that the want of color is felt so much the more.

A drawing in black is at best nothing but a kind of sketch to be completed first in all directions by our fancy ; photography is in this regard of such unsurpassable completeness that our fancy is not called into actual requisition. And very likely it has been principally this circumstance which produced the photographic impressionistic school, whose endeavor it is to abolish forcibly the finely executed drawing, instead of adding what may be still wanting. With the accomplishment of colored photography these efforts will terminate. Quite similarly all details of the drawing are governed by photography, and it will then also master all details of color in a manner hitherto not dreamt of, and will become in this respect the unsurpassable teacher of the art of painting. This may appear to many as too sanguine. Those, however, who, in passing through our picture galleries, observe the great influence photography has exercised upon the production of form in painting ; how photography has taught us a correct knowledge of foliage, mountain scenery, distance, and atmospheric perspective—although color plays here the most important part—those will not doubt that a similar change will also take place with regard to the reproduction of color, when photography in colors has penetrated the darkness. The art of painting will not suffer thereby ; but, on the contrary, it will gain. In comparison with photography it will always have complete liberty of composition and the unconditional capacity to leave out and add as required for the purpose of the picture. To obtain the highest effect this may be necessary with regard to color as well as to form.

That color will give much more than simply local tone ; that it is its own modeler and designer is very evident when we consider that to our senses colors have a certain signification of form in a landscape, and that surfaces of equal value in the shadows are set off most distinctly by color. In the latter regard, even the copper engraving is superior to photography, because it renders the same shadow tone in different colors in a different manner, placing smaller lines correspondingly closer towards the violet end of the spectrum.

It will be necessary now to more definitely describe the several colors and their behavior. It is best to observe as closely as possible the spectral rotation, to which, of course, has to be added purple-red, as well as white and black, which latter are considered as colors in painting.

1. *Red* (purple-red and spectral red).—Purple-red, the intermediate color between spectral red and violet, is wanting in the spectrum, while in painting it is the most employed of all “red” pigments. Of course, there are also spectral red colors, among them being cinnabar, which, however, cannot be employed in oil painting, as it becomes brown under the chemical influence of the vehicle. For this reason, it is replaced by lampblack mixed with yellow, and in water-color painting it is likewise preferred to lampblack and carmine, which gives purer intermediate tones. Lately, numerous coal-tar colors have been added, among which the purple colors play again the principal part. Purple-red gives with blue, as well as with yellow, partly pure intermediate colors. White cinnabar mixed with blue gives a brownish tone.

So much for the red coloring matters. Of highest importance to the foregoing questions are the subjective properties of the pigments. Of all colors, spectral red is the one which, by increasing intensity of light, suffers the least change. All other colors, mostly blue and violet, approach thereby towards

white. The same is also the case with yellow, while red remains always red and assumes only a slightly yellowish tint. This can be demonstrated by numerous examples. In pyrotechnics the red lights are always the most intense in color; of all saturated brilliant colors the red ones act the most sparkling. Red stars are most prominent. The picture of the setting red disc of the sun, which is thrown through a lens system upon a white surface, remains always red. By application of very dark glasses of different color for the observation of the sun through a telescope, all glasses, with the exception of the red glass, furnish white pictures. Blue is the last color which can be distinguished at night, and all purely white light sources will look bluish at small intensity. The moonlight, therefore, appears bluish, and the incandescent electric light is blue at some distance, although it can easily be proven by a comparison with daylight that it is purely white. Gold yellow, on the contrary, appears intense in sunlight, as shown in oil paintings. It is seen, therefore, that the same white light—sunlight we call white light—appears to us of different colors according to its intensity, and that its appearance changes with increasing light-power from a bluish tone to the complementary yellow. It is, therefore, easily comprehended that the human eye is only able to compare the brightness of different colors at medium intensities. At great brightness, blue always appears darker than red; with less brightness it appears lighter. Although it might appear from this as if it would be difficult to harmonize complementary colors in such a way that at uniform increase or decrease of intensity they are always supplementary to white, this is not the case. When bright yellow, for instance, appears relatively brighter than the blue previously harmonized with it, the resulting white must also look yellow, to make the impression of greater brightness to our eyes, while, *vice versa*, depending upon the character of the component, at lower intensity it becomes blue. Everywhere, therefore, the proper impression remains.

If we return now to the spectral red, we will find that everywhere in the picture where it has to make a saturated and brightening impression, it must remain red, and, at most, may pass a little more into orange, but that it can never become whitish, or, at the highest intensity, quite white. The same holds true with purple-red, which in its highest intensity appears to pass into vermilion, because the blue or violet represented in it looks whitish. Tones will therefore never appear even with purple-red if it was not previously strongly mixed with white at medium brightness, as, perhaps, with pink.

At decreasing intensity, however, red will pass very quickly through red-brown into a deep black. This peculiarity, in connection with the one previously described, gives to it a sparkling, glowing character, where the brightest light is alongside of deepest darkness. Red is a warm light-color; not without reason was it compared by a person born blind, after a successful operation on his eyes, with the shrill sound of a trumpet.

Pure red in large quantities acts upon a painting too violently and is blinding. No greater mistake, therefore, than to paint a human head upon red background. Red remains, as long as it is not light, weak, so that it becomes red-brown, always pretentious, calling attention upon itself. It should be applied, therefore, with moderation. Even then, when it is to govern the whole picture, at sunrise or sunset, it divides its supremacy with the proper light-colors, orange and yellow.

2. *Orange*.—Although the orange-colored light is as simple as any other, it makes the impression upon everybody of a mixed color of yellow and red, quite as violet appears to us as a mixed color of blue and purple, and it cannot be denied that there is good reason for this idea. While (as shown in water-color painting) from the three colors, purple-red, yellow and blue, which for that reason are designated as primary colors, all other pure colors, as orange, green and violet, with their intermediate tones, can be mixed, it is in no way possible to obtain the same result from orange, green and violet. Orange and green will never give yellow, but a yellowish brown; green and violet do not form blue, but a neutral tint; violet and orange do not give red, but a dull red-brown.

The last-mentioned combination would be less surprising, because both colors lay on opposite sides of the spectrum; but for the two previous ones there is, according to our present optical knowledge, no reason for such behavior, if we do not accept that all orange, green and violet coloring matters are mixture colors from the three so-called primary ones, of which one, namely, purple, does not exist at all in the spectrum. For this an objective and not a subjective cause must be necessarily the reason, a cause which is to be looked for in the substance of these colors, and not, perhaps, in some property of the optical apparatus of our eye. This has to be acknowledged as long as the explanation of the formation of the so-called secondary colors from a mixture of the primary ones is given. Here, there is no use of color theories, neither Young, Helmholtz, Hering, nor any other, because there is not a subjective but an objective proceeding where it should be possible to filter out, so to speak, by subtractive mixtures, all disturbing colors, with the exception of those desired.

Pure orange very seldom appears in pictures, except in sunrise and sunset paintings, and in landscapes with autumnal foliage.

(To be continued.)

POLYCHROME PROJECTIONS BY MEANS OF NON-COLORED PHOTOGRAPHS.

BY LÉON VIDAL.

[Conference at the Photo Club of Paris.]

INSPIRED by suggestions published in 1869 by C. Cros and L. Ducos-du-Hauron, we have endeavored to accomplish, in order to apply it to polychrome projections, the selection of colors through the aid of plates of given special sensitiveness. This application has not been made by anyone in France, at least publicly. Mr. C. Cros in his paper entitled “*Solution Générale du Problème de la Photographie des Couleurs*” (1869, Gauthier-Villars) says:

“You must not be surprised if I do not contribute accomplished results and if I do not seek to further my own ideas. I have not now, nor have I had, any means of realizing it. To seek those means would imply a great expenditure of time and toil which would be followed by great labor to put them into practice.

“I do not say this to induce anyone to come to my aid. I have no great desire for it, having been obliged for a long time to do without those means; I have been accustomed to follow rather the general problems of science than particular accomplishments.

“The solutions I have found to the particular problem of the photography of colors are herewith published, and I have not reserved the commercial rights

thereof. The idea goes to the public domain, and the special *savants* and the experimentors will not be hampered in their investigations."

It is clearly evident from the above declaration that Mr. C. Cros did not at all accomplish the idea published by him.

We were desirous of ascertaining whether Mr. L. Ducos-du-Hauron had, on his part, made a practical application of his idea of polychrome projections published in his pamphlet of 1869, entitled "*Les Couleurs en Photographie, Solution du Problème*" (Marion).

"The projections, of which I gave the principal in 1869 (he wrote to us from Algiers under date of 18th March, 1892), were, it is true, experimented upon and verified by myself; but, in order to produce them properly before the public, I lacked the apparatus and practical means of which I could avail myself."

It is therefore well established that Mr. L. Ducos-du-Hauron limited himself to experimenting on this sort of projection without producing them publicly. Since our paper on this method, read before the French Society of Photography at its session of March 4, 1892, illustrated with experiments, Mr. Lippmann says that he did, several years ago, accomplish some similar experiments, but that they were neither published nor exhibited publicly.

It was on the 7th of February, 1892, during a conference given by us at the National Conservatory of Arts and Trades, that the first experiments of this class were produced. They were afterwards presented, on the 4th of March, at the French Society of Photography, and, lastly, at the Photo Club on the 8th of March following. The above facts have a special interest, and it was necessary therefore to establish them in as precise a manner as possible.

Outside of France, polychrome projections, based on an identical principle, were made at Philadelphia by Mr. Ives, who has been working on the subject for several years, and at London by Mr. Scott.

The experiments made by Mr. Scott in this direction are less known than the labor of Mr. Ives. They have been published, not with the detail of their practical operation, but as to the principle on which they are based, and as to the nature of the results obtained.

After a careful perusal of all that has been published on this subject, we arrive at the conclusion that that which personally may belong to Mr. Ives is above all the special construction of the apparatuses of which he makes use.

His persistence in recognizing that the Young and Helmholtz theory of colors is the best, and that it is an error to admit Brewster's, does not prove by any means that he has invented this theory. Maxwell, and all the *savants* of the period, have recognized that Young's theory is nearer to the truth than that of Brewster in considering the yellow, the red and blue as primary colors.

As to the effects due to the mixture of the radiations of different colors, sifted by diapositives obtained under certain conditions, they were foreseen and suggested since 1869 by Messrs. Cros and Ducos-du-Hauron. Where is, then, the part corresponding personally to Mr. Ives as to these effects?

Does the use of orthochromatic plates, necessary to the selection of colors in the formation of negatives for said application, constitute a method belonging to Mr. Ives? Not at all. It was all suggested, and the invention of orthochromatism, whichever means he may employ, chlorophyl or other, does not belong to him.

What is due to him is to have been a skillful adaptor, of having first sought the realization of ideas, principles and processes published by others.

It is to have undertaken to popularize the knowledge of this most interesting application, of having sought and probably produced apparatus capable of rendering these experiments in a more perfect manner.

No one wishes to deprive him of this merit, and it is to be hoped that he is contented with that, as all other claims could be successfully challenged.

For our part, we only seek one thing, that is, to also popularize, within our sphere of action, a method which we believe is destined to render great services to the arts and sciences.

No more than our predecessor in this direction have we any right—nor do we by any means claim it—to be the inventor of one of the principles utilized. It may be that we seek, as does Mr. Ives, a mode of operation with the view of attaining the same end, which may seem to us more sure, more rapid and easier, but that is only a question of formulas. It may be, also, that in the construction of special apparatus he may put into operation an idea of his own, the product of his own studies, in which case he would be the owner of its special construction, but of nothing beyond that.

It is, besides, no mean thing to devote one's self to the task of putting a good idea into practice, and to become the promoter of its practical operation.

An invention not put into practice would become a sort of negation, if one or more promoters did not introduce it into the domain of useful things. That is why there is occasion to render justice to Mr. Ives for the persevering efforts he has made with a view of popularizing the use of polychrome projections. That is why we believe we have rendered some services, on our part, in undertaking investigations and publications in that same direction.

We considered the above preamble necessary in order to make the distribution of rôles as exact as possible. We shall now enter into the description of facts.

(To be continued.)

[From Photography.]

SUBJECTS FOR LANTERN SLIDES.

BY CHAPMAN JONES, F.I.C., F.C.S.

IT is probable that, so far as amateurs are concerned, there will be more lantern slides made during the next three months than during the whole of the rest of the year. Doubtless there are many who have recently looked over the negatives they have secured during the summer months, and set apart those that will lend themselves most advantageously to slide making, and it would be instructive if we could note the reasons for the selections made. In many cases we are afraid the only thought is as to whether the negative possesses those technical qualities that experience has shown to be desirable for the purpose. There may be perhaps a street scene or two showing nothing in particular, some sea views with calm water, and a sailing yacht in the middle, some more or less successful attempts at pictorial landscape, one or two portraits, a few groups, and some animal "studies." We would ask anyone whose practice accords with this description, of what use are the slides when made? However perfect in technique, they cannot be of interest to strangers, and the exhibition of them to the members of one's own household is likely to be patiently endured for the sake of the maker rather than for the pleasure of seeing them. They will, of course, delight the children, for almost anything shown by a magic lantern will do that, but the

little ones would be far more delighted by a few highly colored slides of subjects that appear to move upon the screen, such as a dancing nigger or a lion with eyes that roll and a mouth that opens and shuts.

A fortnight ago we gave the key to the selection of suitable subjects for lantern slides in stating that pictures on the screen must be described as illustrative and not decorative, and that consequently they are not, in the sense that pictures are, complete in themselves. The exact aim of every slide ought to be carefully made clear when it is being shown. This may be often done in a very few words at an ordinary society lantern night where anything like a lecture might be out of place, but fancy titles such as "A Dark Night" or "An Evening Idyl," and general titles, such as "A Family Group" or "Ploughing," are, in our opinion, entirely out of place, and unable to redeem even the best of slides. But if "The Dark Night" illustrates some meteorological phenomenon, if "The Family Group" represents persons known to the audience by repute or otherwise, and if "Ploughing" shows some characteristic feature of the operation, the slides would have an interest, and therefore a reason for being shown.

The selection of subjects for lantern slides must depend upon the spectators before whom they are to be exhibited. This principle is thoroughly recognized by professional lecturers, whether of the purely educational or chiefly entertaining kind, but it is often sadly neglected by those who make slides because they consider them the best means of showing off their photographs. For family entertainment the incidents of the summer outing may prove instructive as well as amusing. They will bring to mind again the various scenes, refreshing the memory almost as effectually as a second visit, and in this way serve to prevent that gradual mental distortion of objects visible only to the mind's eye that every one is liable to. But take such a set of slides out of the family, and show them to an audience of strangers, and they become meaningless. Similarly the representation of incidents occurring at meetings of photographers, such as the Convention, may be very amusing and enjoyable to those who know the individuals, and the surrounding circumstances, but entirely out of place and wearisome to a general audience.

The subjects that may be effectively illustrated by lantern slides are innumerable and so obvious that there is no need to attempt to catalogue them. There is, however, a principle as to subjects that are not suitable, that deserves more attention than it receives; we doubt whether it receives any consideration at all. No subject should be shown on the screen larger than its natural size without first carefully taking into account the effect of this exaggeration. Views in general are, of course, free from this possibility, whether landscape or street scenes. With a very near foreground in the subject, and the use of such large screens as are sometimes set up in public halls, it may be possible even in a landscape to get a foreground figure larger than life-size. But under such circumstances a little license is allowable, for it will probably be found that a really life-size figure would appear to be smaller than life. Portraits, when shown on the screen, generally err in this matter. A slide is prepared from a cabinet bust, leaving on the slide approximately the same margin as on the original, and when the picture is seen on the screen the face is probably a yard or more across, and the portrait looks like what it is—a monstrosity. If it is desired to show a portrait on the screen we would recommend taking the whole figure, as in the old *carte-de-visites*, or making a picture of the individual in his accustomed apartment or garden, or with such natural surroundings that the figure on the screen will not strike the eye as exaggerated. Slides of flowers are almost invariably unpleasing, and exceedingly misleading when considered from an educational point of view, because of exaggeration, and no amount of technical perfection or artistic beauty ought to be allowed to atone for this fault. If a vase that is no bigger than one's thumb appears to be of suitable size to form a center ornament for a garden, the representation is bad. Slides of microscopic objects come under quite a different category. The representation is enlarged to show detail which is otherwise invisible, and this is well understood by every spectator. In

such cases, however, the amount of enlargement as shown on the screen, or else the actual size of the object, ought to be always clearly stated. The enlargement as seen on the slide itself is nothing to the point, because it is the image on the screen and not the slide that is being shown.

We have heard a matter which we take to be quite irrelevant imported into the question of the size of pictures in this connection, viz., the angle under which they are viewed. It is stated, and we believe correctly so, that if a dark conical box is prepared so that a transparency can be placed in it at a certain distance from the eye-hole, and another transparency of the same subject, but enlarged at a proportionately greater distance from the eye-hole, it is not possible to tell by looking which transparency is in the apparatus. Both are seen under the same angle, and therefore they cannot be distinguished. And so some might argue that if a life-size figure of a man is projected upon a screen 10 feet from a spectator, and it appears satisfactory, an image of double life-size may be projected on a screen 20 feet away without appearing larger because both subtend the same angle. We would advise those who think this to try the experiment. The screen is under entirely different conditions from the picture in the black box, and it would be as erroneous to argue from the one to the other as to suggest that a 6-foot man could make himself appear to be a dwarf of 3 feet high by doubling his distance from us.

[From *British and Colonial Druggist*.]

PHOTOGRAPHIC RESIDUES.

BY J. PIKE.

AMATEURS have the reputation of destroying a large proportion of the millions of dry plates supposed, and not without reason, to be annually manufactured. As many chemists are amateur photographers, it is to be hoped they, at all events, do not help to swell the number of those who from some motive or other fail to look after the residues; that these residues have a value distinctly proportionate to the amount expended in material, has been time after time demonstrated.

I am firmly of opinion that it pays everyone who works, or even plays at photography, to save and precipitate from time to time his washings, fixing baths, etc., that is to say:

1st.—The fixing baths used for plates and silver prints, albumenized, bromide, or chloride, of all sorts. I “fix” every scrap of paper, trimmings, etc.

2d.—The washing water (first bath) of silver prints.

3d.—The developers used in hot-bath platinotype printing.

4th.—The developing and toning bath used in the cold-bath platinotype process.

My experience with regard to the recovery of the residues is that the most generally convenient method to adopt is in the cases of the two first batches of waste, to precipitate as sulphide, either by pouring into a sufficient bulk of waste a few ounces or *quantum suff.* of solution of potassium sulphide, or by putting together a sulphuretted hydrogen apparatus and passing the gas through the liquor; the latter apparatus will come in for other purposes. I recommend the amateur to invest in a small cask, which should be fitted with a tight cover for obvious reasons. Pour all silver washings into this cask; when nearly full, add potassium sulphide, stir, and allow to settle, pour off the supernatant liquor, and again fill up with waste, and once more precipitate; repeat the operations until the depth of sulphide at the bottom of the cask is sufficient to warrant its removal. It may be collected and dried, or stored away in readiness for further operations. If allowed to filter through the hands of the refiners, some disappointment will be caused at times by the smallness of the amount received for the same. I find the simplest way is to wash the precipitate with water two or three times, then dry, though this is not absolutely necessary, and add nitric acid sufficient to dissolve; any brown precipitate remaining after this treatment

may be filtered out and thrown aside. The filtered liquid is now evaporated to dryness, once more dissolved in distilled water, and again evaporated or recrystallized, or it may be kept in solution tested by the argentometer, and made up with nitrate of silver to some standard strength. I have used this solution successfully for sensitizing purposes; the salt itself has been similarly used; or fused with an equal weight of potass. nitrate it may be moulded into caustic points. Chemists will find it convenient at times to convert the solution at once into oxalate (by precipitation with oxalate of ammonium) or into oxide, to be afterwards worked up into marking ink. The dried sulphide may, of course, be mixed with a flux (carb. soda) and reduced in a crucible, if preferred.

In a table by Mr. Lyonel Clark, it is shown that, estimating a sheet of sensitized paper to contain 36 grains of silver, about 27 grains should be recoverable, or for every 10s. expended we should get back from residues 7s. 6d.

Of course, it must not be expected that many commercial papers will be so rich in silver; but from some years' experience I can confidently assert that the proportion of recoverable value is astonishing. When spending years ago an average of £10 or £12 yearly in paper and plates, and with rough and ready methods of recovery, the value of residues would not be less than £5 per year, or enough to buy a good piece of apparatus.

Now for the treatment of waste solutions—3d and 4th—those used in platinum work. In the hot-bath process it is usual to use the potassium oxalate bath until it begins to show a yellow coloration. To a bath answering this brief description add about one-fourth its weight of saturated solution of sulphate of iron and heat to boiling point; a porcelain dish should be used. Metallic platinum separates and may be filtered out; the filtrate may be saved for further treatment, or may be used as a developer for bromide prints.

Old platinum toning baths should be placed together in a suitable vessel, and 2 or 3 ounces of ordinary ferrous oxalate developer poured in; platinum in the metallic state is quickly thrown down.

These platinum precipitates, as above, may contain traces of iron, therefore it is best to place them in an evaporating dish, with a little water and sulphuric acid, to remove the iron as sulphate; wash the platinum residue, let it settle, decant the liquor, dry the platinum and dissolve in—

| | |
|-----------------------------|----------|
| Pure nitric acid..... | 1 part; |
| Pure hydrochloric acid..... | 4 parts, |

with gentle heat, using only sufficient acid to effect solution. This solution is evaporated to dryness, and in that condition may be used in preparing the platinum toning salt, potassium chloro-platinite; or perhaps it would be preferred in solution, in which case boil, to get rid of excess of acid, and dilute with distilled water. Very few will attempt to make their own chloro-platinite of potassium—a most useful toning salt. Briefly, an aqueous solution of platinic chloride at a temperature of 100 degrees C. is placed in a suitable bottle, and a strong stream of washed sulphurous acid gas passed through, the object being to reduce the salt from the platinic to the platinous condition; the tube through which the gas passes is arranged in such a manner that the flow can be instantly checked from time to time, in order that the solution may be tested, and the progress of reduction gauged by the test solution, ammonium chloride. An excess of sulphurous acid means the formation of platinous sulphide, a salt not reducible by ferrous salts. The solution obtained consists of platinous chloride, sulphuric and hydrochloric acids. "To convert this into the double salt, potassium chloro-platinite, it should, after cooling, be poured into a porcelain basin, and a hot solution, containing 25 grains of chloride of potassium in 50 c.c. of water, well mixed with it by stirring; the chloro-platinite then separates in the form of a crystalline powder. It is allowed to settle twenty-four hours, the crystalline deposit collected on a filter,

the mother liquor being drained off. It is then washed with a little water and then a little alcohol, until the last washing gives no acid reaction; the powder is now spread on filtering paper and allowed to dry in a darkroom, as the salt, when moistened with alcohol, is reduced by the action of light."

Apart from the satisfaction derived by a knowledge that one is pursuing a hobby in a rational and economical manner, I have always looked upon this recovery of residues as a duty to be religiously executed. The amateur has, of course, to think of others besides himself; his wife often objects to the use of the bathroom, kitchen or scullery as a laboratory; and if he attempts to burn his residues in the drawing-room fireplace, there are invariably "ructions," to say nothing of the disagreeable aroma arising from the operation itself. On the whole, therefore, I prefer the method briefly outlined above. A cask should be used to hold the waste—anything else is likely to be overturned or cleaned out by some "new broom," in the shape of a new and zealous servant maid. This experience has been mine, and it was, I remember, peculiarly aggravating. A good-sized cask with a cover is the thing; this is kept in the back premises (after the first sniff the "silver mine" will be generally boycotted), and then operations will go on smoothly and profitably.

[From *The British Journal of Photography*.]

GELATINE VERSUS STARCH AS A MOUNTANT.

THE majority of photographers employ starch paste for mounting pictures, while professional print-mounters, as a rule, use gelatine, or, more often perhaps, common glue. Several have at times remarked to us that they would prefer gelatine as a mountant if it were not so difficult to manage. In practice, however, when the proper conditions are understood, the difficulties prove more imaginary than real. It has frequently been stated that prints mounted with gelatine last longer than those mounted with starch. This is probably the case when the mounts contain injurious matters, as the layer of intervening gelatine is a better insulator than one of starch. This better insulating property is also a great advantage with some of the deeply colored mounts in which the coloring matter is partially soluble in water. If with such mounts starch be used, there is a danger of the whites in vignetted prints becoming stained, whereas, if gelatine be employed, the trouble will, except in very bad cases, be avoided, because before the pigmented coating on the mount has become fairly wetted the gelatine has set, and, so to speak, formed a protecting layer.

Many who have tried gelatine as a mountant have failed to use it successfully. The failure, however, can generally be traced to one or other of two causes, or, perhaps, the two combined. The first is the employment of an unsuitable gelatine; the second, using too thick a solution. Some would consider that for the present purpose the highest class of gelatine should be employed. This is a mistake, for the very lowest is by far the best for the work. If a solution of one of the highest qualities of gelatines, such, for example, as those used for dry plates, be made and applied to the back of a print, it will be found that before the whole can be evenly coated, even when its dimensions are small, that which was first applied has set, and when once it has set it has lost the greater part of its adhesiveness and can then only be made to adhere, if at all, by heavy pressure or hard rubbing. This trouble may to a certain extent, it is true, be mitigated by diluting the solution, but it does not overcome it.

If, instead of using a gelatine of the character just referred to, we take common glue, as sold in the shops at a few pence a pound, and make a solution of that of the same strength as the gelatine, and use it at a similar temperature, we shall find no difficulty in coating even large prints before any portions begin to gelatinize. For this reason common glue, in practice, proves more adhesive than the finest quality of gelatine. Reference has just been made to failures arising from the employment of too strong a solution. The stronger it is, the quicker it will set, while very dilute solutions

will require a comparatively long time before they will assume a jellied condition. So adhesive is this material, that those who have not tried it will be surprised how weak a solution of common glue will serve for sticking papers together.

Reference has been made to common glue, but, be it understood, only as an example of its properties as compared with those of the best gelatines. It will be manifest to all who know anything of the subject that its employment for mounting silver prints should be eschewed if their permanence is a consideration, owing to the impurities with which it is always contaminated. It is, also, almost invariably acid, as, indeed, are the highest qualities of foreign gelatine, which, quite apart from their quick-setting properties, render them unfit for mounting photographs. It will now be seen that what is required for the purpose is a pure kind of gelatine with the mechanical properties of the common glue. This we can obtain in some of the gelatines of British manufacture. They are known commercially under the name of "soup gelatine" or "soup strengthener." Nelson's, Cox's, and other firms supply such gelatines, and they can be relied upon, while, at the same time, they are very inexpensive. The first-named firm also supply a gelatine known as "No. 2 soluble." This is an excellent gelatine for the purpose, as it combines purity with slow-setting properties. It may almost be taken for granted that English gelatines of fair quality are always neutral, while foreign ones are invariably acid.

It is impossible to give a definite formula for making a solution, as different samples of gelatine vary so much; but the weaker it is, so long as it will stick, the more convenient it will be to use, and the less heat will be required to retain it in a fluid state. As a rough guide, it may be mentioned that such a proportion as will form a weak, though not too tremulous, jelly after standing in a cool place all night, will be found most convenient in every way. It may also be mentioned in connection with the strength of the solution that the more dilute it is, the shorter will be the time it will keep without decomposition. Hence it is desirable, when preparing several days' supply, to add an antiseptic, such as a few drops of oil of cloves, or, better still, a little methylated alcohol. Alcohol can not only be used as an antiseptic, but it can be made largely to take the place of water in the solution. An adhesive, so prepared, is extensively used for mounting prints on boards with a clear margin so as to avoid the cockling of the mount; but, as this portion of the subject has been so frequently dealt with, it need not be referred to on this occasion.

One other matter may, however, be alluded to in connection with the use of gelatine—namely, mounting photographs in optical contact with glass. Some have employed the higher classes of foreign gelatines on account of their whiteness and transparency. To this fact may be attributed the difficulties many have experienced in the work, and also the existence of so many fading pictures. These gelatines, as we have just said, are difficult of application, and, by reason of their acidity, conducive to fading. However, by employing the class just recommended, these inconveniences are avoided, while the purity of the whites of the prints will in no way suffer from the apparent slight opacity and trifling tint of the gelatine.

STEREOSCOPIC PHOTOGRAPHY.

BY G. A. THOMASON.

[Birmingham Photographic Society]

It is with a feeling of diffidence that I address myself to this subject this evening. In the first place, the last time it was discussed before the Society I found myself totally opposed to it, and it is a somewhat anomalous position to place one's self in to be found advocating at a meeting of this sort the very thing one had opposed previously. In the next place, there are gentlemen in the room who know far more about the subject than I do, and who are better qualified to speak upon it than I am. The difficulty the Council had, however, when I was selected to read the paper was this, that no

matter how diffident I might be, they were still more so, and that must be my apology for any shortcomings which may appear in my treatment of the subject.

STEREOSCOPIC PHOTOGRAPHY NOT DEAD.

Some of our members have obtained a great deal of amusement out of this subject by chaffing those who advocate its popularity. One gentleman, for instance, avers that it is as dead as Queen Anne. He, however, is careful not to say to which Queen Anne he alludes, because it is very evident that stereoscopic photography is not dead. On the contrary, its claims are being urged more every season, and I venture to predict that it will yet become the most popular form of amateur photography. Another joke made at its expense is that in instantaneous pictures made by its aid moving figures are so tantalizing, that a man, in the act of walking, presents such a realistic appearance, that one feels a desire to drop a penny in the slot to make him move, or even to take more drastic measures still. Well, gentlemen, I claim that that is an additional charm to the stereoscopic worker, viz., to depict Nature as it really is, or, shall I say, as we really see it. I hope to prove to you before I finish my paper that it is impossible to see an ordinary photograph adequately represent any subject. A friend, who is present, remarked a short time ago, in the club room, that we got our results by means of a trick, and that it was not a genuine representation. Well, it is for me to prove that it is not a trick, but the most correct and the only truthful way of delineating a view or picture upon a plane surface. If you wish to produce, in a natural manner, several planes, there is, so far as I know, no other way of obtaining the result than by stereoscopic photography. If I hold a book in my hand at arm's length edgewise, and close one eye, I see the edge of the book only; but if I open the other eye, still holding the book in the same position, I see, not only the edge, but also a portion of the side of the book, which proves that with two eyes two distinct pictures are formed which, however, coalesce either by a mental act, which is the most likely theory, or from some connection between the nerves of the retinae, which, at present, has not been discovered. Many theories exist, but as they all differ, it is no part of my duty to trouble you by discussing them.

BINOCULAR VISION.

It seems to be upon the whole considered most probable that the power of forming a single idea of an object from a double impression conveyed by it to the eyes is the result of a mental act. If you hold up one of your index fingers close to the eye, and one farther off, you will see that by looking at the one farthest away with both eyes, you really see three fingers. In the same way, by looking at the nearest one, you still can see three fingers, *i. e.*, by bringing the optic axes to bear upon the near finger, the one farthest away is brought to a different part of the retina in each eye, and two fingers are seen behind the one which is really in focus. These experiments might be repeated in numerous ways; but I think I have established the fact that binocular vision produces two different impressions, which by a mental operation gives rise to only one sensation. Now, if we look with both eyes at an ordinary photograph, *i. e.*, taken with one lens, it is evident something must be wanting to adequately represent the subject to us, and all will agree that there is in every photograph, so taken, an appearance of flatness which can only be overcome by aerial perspective, and so when the distance is almost obliterated by atmosphere, and just a dim sensation of the mountains or trees, or whatever may be at the background of the picture, presents itself, it is seized upon as a triumph of photographic art; often by the very men who have done all they can by the use of isochromatic plates and yellow screens to overcome what they know perfectly well is not a representation of Nature in its best aspect; but which is the best result they can accomplish. The fact, also, that to look at the photograph with one eye only, and then preferably either through a tube or shaded by the hand, will give a partially stereoscopic effect, all goes to prove that for either the most correct repre-

sentation, or to afford the greatest pleasure to our friends or ourselves, the use of the stereoscope is not only not a trick, but the only legitimate way of showing or looking at our pictures when done.

WHY THE STEREOSCOPE WENT OUT OF FASHION.

You may ask if, then, all you say is true, how is it the instrument is gone so much out of fashion; or, as I put it in commencing, "been asleep"? That is easily answered. There is no doubt that great care is necessary in mounting the pictures, which, to an amateur, is only increasing his pleasure in the work, and an incentive to excel; but which to the tradesman, who gets the work done in the cheapest manner possible, and which he accomplishes by employing, probably, young persons, who think but little, and care still less, as to how the slides will look when placed in position, it is not fair to the art to judge of it by its past history. For years I could never look with any pleasure through a stereoscope, because, in order to make the pictures overlap or combine, I had to strain my eyes almost out of my head, and the consequence was that, after looking at about half a dozen views, I had such a headache that I was compelled to give up looking at any more. A few months ago an American called upon me with a new form of stereoscope, and I found that it was a wonderful improvement on any I had seen before, but still there was a slight strain, and I found at last that it occurred more with some pictures than others, and, in fact, with some there was no strain at all, and upon measuring the distances they were mounted apart, I soon found out the reason. More strain was occasioned by those mounted 3 inches apart, and some were even over this, which made it worse. I found that those at $3\frac{1}{4}$ ths of an inch were quite normal and easy to look at. I believe that $2\frac{1}{2}$ inches is better for many people, but as I can see $2\frac{1}{4}$ -inch views quite easily, I prefer that width, as, of course, I can get by means of the quarter inch, a larger picture and more subject.

THE OPTICS OF THE STEREOSCOPE.

Perhaps at this stage it would be well for me to illustrate by a diagram what the action of the lenses in the stereoscope is. I should say that the form of instrument as now used was invented by Professor Brewster. A double convex lens is divided across the middle, and the two halves are set with their thin edges in juxtaposition. In the *Stereoscopic Manual* by Chadwick, which is very interesting and useful to all workers in this branch, he points out that it is possible to construct a stereoscope without lenses at all. He says, in considering the size of the pictures and the dimensions of the box, "When we look at a tree in Nature a mile away, we view it with so little convergence of the optic axes as to be termed practically parallel vision; and as it is by greater or less convergence that we judge distance, we must view the photograph of the tree with practically parallel vision, for it must be remembered that, if we observed the tree with a greater convergence of the optic axes, we should not estimate it at its true distance, but at a nearer distance; and as our eyes are only $2\frac{1}{2}$ inches apart, it is clear that the image of the tree in the two photographs must not be more than $2\frac{1}{2}$ inches apart. This dimension, then, settles the size of the photographs at not more than $2\frac{1}{2}$ inches in width. With normal vision, we cannot conveniently observe anything distinctly at a nearer distance from the eye than 8 inches long in order to accomplish this." It was pointed out the last time the subject was discussed in this room, I think by Mr. Griffiths, that even this simple form of stereoscope was unnecessary, and that with practice it was possible to get the effect by holding the pictures in the hand and by diverging the eyes until parallel vision was obtained. This I tried at for a long time, and at last succeeded in getting the effect; but I thought there was too much strain upon the eyes, and no doubt there was, and for this reason: If we wish to obtain the best result from a photograph, as to the natural size and perspective, whether large or small, we should view it at a distance from the eye equal to the focus of the lens we have used in taking the view, and it is

for that reason most people prefer whole-plate size, as the lens usually employed is about 10 inches focus, which may be considered the normal focus of the eye. Now, as it is necessary to use a lens of about 5 inches focus for stereoscopic work in order to get in the usual angle of view, and by that I mean about the same amount of subject as that obtained with an ordinary quarter, half, or whole plate lens, it becomes necessary to get the assistance of a lens in order to procure the correct proportion, because it is evident that, if a picture is produced by a 5-inch focus lens, and we observe the print at 10 inches from the eye, it would appear only one-half its true diameter.

So far as I can see, the object in placing the lenses in this position is to give parallel vision, as well as to magnify the print to its proper size. You will see by the diagram which I have prepared that the ray of light is caused to slightly diverge, and thus place the optic axes in the same position as when looking at the view itself. For this reason the lenses should be mounted not more than $2\frac{1}{2}$ inches apart from center to center, as the normal distance between our eyes is approximately $2\frac{1}{2}$ inches, and, consequently, if the lenses are farther apart, as is the case with many stereoscopes, only the thin edges of the glasses are used, and the diverging lines are proportionately more acute, and, consequently, the true distance is not appreciated, and objects in the picture convey the impression of something much smaller than is really the case. While this objection may also be urged, I think, that the more the lenses converge, or, as they are used in in the stereoscope, diverge, the greater the strain will be upon the eyes. We may now leave the theatrical for the more practical part of the subject, and I would first call your attention to the convenience of this work over ordinary photography.

SIZES IN STEREOSCOPIC WORK.

Most of you will, I think, agree with me that quarter-plate work is too small for any purpose except lantern-slide making, snap shots in the hand camera, or *carte de visite* portraits. Half-plate work is very little better. The views are too small to frame for pictures, and too large to mount in a scrap album, and, in consequence, the majority of the prints are left to tumble about until they are spoilt. With whole-plate work it is different. You may with this sized view decorate your walls with pictures worth looking at, but at what a cost! Plates, paper, chemicals, mounts and frames, besides the hard labor entailed; and then, after carrying the apparatus five or six miles, finding nothing worth exposing upon! That is one of the pleasures of whole-plate work. Now, take the stereoscopic camera. You can use a small and lightly made camera, a light stand. You can use only one lens if desired, and take a quarter-plate picture for a lantern slide, or if you wish to get a half-plate picture you have only to adapt one lens and remove the dividing screen, and you have with your 5-inch lens a wide-angle picture, or you can carry a $7\frac{1}{2}$ -inch lens, and place in your camera front for an ordinary view. But why take all that trouble? Suppose you see a nice bit, and you want to get a lantern slide, or quarter-plate size, for a pocket album, or a stereoscopic view for the drawing-room table, you have it all at once in the one negative; but I can carry you still further. Suppose you think you would like a half-plate picture framed for the breakfast-room or nursery walls, or a whole plate, or 12×10 , for the drawing-room, all you have to do is to enlarge the subject on bromide paper, and you have it.

Now, I ask you, can any other camera give you all these advantages, and I am sure you will agree that it is impossible to get the same results in any other way. There is nothing for you to relearn or to forget before you can produce satisfactory stereoscopic slides. The negatives require a full exposure to prevent chalkiness and in mounting the slides you have to transpose the pictures from left to right, in order that, when looking at the view, you may place the right-hand side picture as taken before the right eye, which it will easily be seen would not be the case unless transposed, from the fact of the pictures being taken inverted. As I mentioned before, I take some object at the middle distance, and measure $2\frac{1}{2}$ inches from center to center, carefully cut the two pictures top and bottom before dividing them, and, with ordinary

care in mounting, a perfect result is obtained. I place a straight line across the mount as a guide, both for the center and also to keep the prints upright. I have not thought it necessary to demonstrate at any length before you, because, as I said before, there are no new dodges to learn in order to assist you to success. I hope I have succeeded in removing any prejudices which may have existed in your minds against the subject under discussion, and also in setting forth a few of the pleasures which we who follow it enjoy. I have only to say in conclusion that I do not think any one who has followed it has ever grown tired and given it up entirely, while I think all will agree that a stereoscopic picture properly taken, mounted, and viewed, is indeed a thing of beauty and a joy for ever.

[From *The British Journal of Photography*.—*Lantern Supplement*.]

PROGRESS OR FASHION?

G. R. BAKER.

How much of the present design in optical lanterns and projection apparatus is due to progress or influenced by fashion?

This is a question that may well be asked in the first number of a *Lantern Supplement*; and, on looking back with an experience in the lantern world of more than a quarter of a century, it seems to me the answer may very fairly be said to be the greatest share is "Progress." The marked difference of late has been in the gravitation of the special designs, or those possessing most originality, to either extreme, viz., "The Giant" or "The Pigmy."

The large objectives (now recognized and admitted, after much question and adverse criticism, to be superior for long-distant projection) necessitated modified apparatus, for the weight of the fronts, when extended to get the correct focus, needed supports, hence the greatest departure in design of dissolving-view apparatus, as carried out for Sir David Solomon, which followed the appearance of the "Triple Rack," the "Docwra," and the "Perfect" Triple lanterns. Miniature lanterns have been to the fore, and various designs have been placed on the market to secure efficiency when working, and yet be convenient for personal carriage. Notably the lanterns with fronts to reverse and pack inside the body; while those which slide in the body (the outcome of suggestions of Mr. Andrew Pringle) prove to be practical as well as possible.

Camera bellows-fronted lanterns are becoming popular, and here we have a revival of a very early type of lantern, and one which in America has been in use for years. From the same country came the demand for large-size front lenses, and, when one or two popular lecturers (notably Mr. French and Mr. Snazelle) exhibited what could be done on a large scale at the Crystal Palace, and elsewhere, our own representative lecturers followed suit.

The development of apparatus in this country (as is usual when once the requirements are made known) have been marvelous, and it is only necessary to look at the *Almanacs* and *Year Books* to see what great alterations (and probably advancements) have been made in lanterns during the past few years. The perfection of detail follows as a matter of course as long as users of apparatus will purchase and so encourage makers to invent or improve.

Simple apparatus of the old order can no doubt produce good results in the hands of operators who have manipulative skill and possess the necessary coolness; but there are so many who cannot help getting excited when in the presence of an audience, and these find the modifications a great boon. For instance, what is more disconcerting than for an accidental touch of the back of the jets to upset the centering of the light, and for the operator to see the disc on the screen partly obliterated? The improved supports and clamping pieces to jets or vertical rack work makes this sort of *contretemps* an impossibility. So, again, with the adjustments to fronts of biennial

and triple lanterns. The new designs have originated because the old were "tried and found wanting" at times.

With the extended use of the electric light, greater attention has been paid to projection apparatus, and, although most of the improvements follow on the lines of apparatus in use twenty-five years ago, certain departures have produced in the result a polariscope and a microscope that can be distinctly stated to be a decided "progress."

Thanks to the experimental and practical work of the Rev. P. R. Sleeman, Professor Sylvanus Thompson, Mr. Lewis Wright, Sir David Salomons and others, results can now be obtained when illustrating the phenomena of polarized light of almost equal excellence and certainly with most of the practical value of that obtained by the late Mr. Spottiswoode, who had the unique advantage of a magnificent polarizing prism of Nicol's form. When Iceland spar became so scarce in large size of necessary purity, a substitute had to be found, and the elbow polariscope, with its polarizing bundle of glass, not being so convenient as the direct working form, the arrangement of making the artificial glass prism was tried, and after that the double reflecting polarizer used. This permits of rays entering and leaving the polarizer in a horizontal plane, and gives sufficient light for all optical experiments in connection with polarized light. With the microscope, the improved objectives, complete set of condensers for the various powers, parallelizing lens, and convenient adjustments to all the necessary portions of the apparatus show in the result a distinct advance on the "Duboscq" projection microscope and others of that class, while the simple instrument with its one substage condenser for using with the objectives of the table microscope gives results in advance of the tube form of microscope of old, with its uncorrected powers, besides being more convenient to use.

The condensed gas system, with automatic regulation, has almost entirely shelved the gas bags, while the cheapening of oxygen by patent and other processes has done away with the necessity and trouble of making one's own oxygen gas. The high pressure that can be safely used has given a power that has been availed of in making mixed gas-jets to give a higher illuminating power; and here, again, is progress, for "light, more light" is the requirement of demonstrators using projection apparatus. The "Focus" incandescent lamp of 100-candle power is a capital illuminant for those who have the electric current laid on in their houses, and when one thinks of the great trouble it was to produce an electric light in the old days we have here a distinct advance and a saving of labor, for by simply switching on the current when once the connections are made, a nice disc of moderate size can be produced, and photographs projected on the screen large enough for any number of friends in a drawing-room to see the detail properly. This, without the drawbacks inseparable from paraffin-lamp illumination.

To sum up, no doubt there is a certain amount of fashion in the size and design of lanterns, and the form of accessory apparatus, but the improved capabilities of same point to the fact that "progress" has not been slumbering.



SMALL LANTERNS AND DISSOLVING VIEWS.

BY W. I. CHADWICK.

[Before the Stereoscopic Club.]

THE practicability of reducing the size and diminishing the weight of magic lanterns occupied my attention many years ago. In *The British Journal of Photography* of May, 1878, I published a description, with illustrations, of two small lanterns which I had constructed. They were very little larger than cigar boxes. The fronts for carrying the objectives were made to disconnect and to pack up inside the bodies when not in use; chimneys were dispensed with in favor of flat tops; they could

be used separately as single lanterns, or together side by side, or one over the other. The illustrations and descriptions were republished in the *Magic Lantern Manual* of the same year. Thus it will be seen that contracting the size, dispensing with chimneys, and packing the front inside the body, is not the new idea many people suppose it to be. With those little lanterns I have given dozens of successful exhibitions at the Manchester Photographic Society and elsewhere, showing the pictures to 20 feet square.

But for a long time, and down to a few years ago, the biunial lantern—*i. e.*, two lanterns in one body, one over the other—was the prevailing design for so-called high-class lanterns, the object of two lanterns being, as everybody knows, for the production of "dissolving views"; and, in these days of lenses of various foci or long-focus objectives, the biunial lantern has grown into a very heavy, elaborate and expensive instrument. The triple lantern is a higher development of the biunial, and, by reason of unnecessary elaboration and inconvenience, both triple and biunial lanterns have fallen into disfavor of late years.

There are, however, other uses for a double lantern, or two lanterns, independent of dissolving views, as, for instance, one lantern may be used for the projection of ordinary slides, while the other may be employed for the projection of scientific experiments, the lantern microscope, polariscope, etc.

But to return to dissolving views. It has been said that this way of exhibiting improves poor slides, and also helps out a weak lecture, and that it is a very pretty effect; so, if people want dissolving views, they must have them.

What is meant by dissolving views is that one picture fades away, or "dissolves" simultaneously with another picture being made visible—developing on the screen.

To produce this effect two lanterns are indispensable; with a single lantern we may have quick-changing carriers, panoramic carriers, or others, to produce an out-of-focus effect, or an eclipse, or semi-eclipse, during the change from one picture to the other. But the true dissolving effect is only possible by two lanterns, as has already been said.

Now, it matters not what form these two lanterns take. They may be placed side by side diagonally, as in Dancer's lantern, or one over the other, as a biunial lantern. The idea that a biunial lantern is more conveniently manipulated by one operator may be entirely dispelled. The proper place for a lanternist to stand is at the back of his instrument, and with a properly constructed pair of lanterns everything is within reach, and the opening and closing of side doors and constant adjusting of the objectives for focusing the slides is rendered absolutely unnecessary.

The contrivance for dissolving one picture simultaneously with the developing of the next was originally a "comb" or serrated "fan," worked in front of the objectives by a mechanical arrangement for gradually cutting off the rays from one lantern with the gradual opening of the other lantern.

The late M. Noton, of Manchester, used an iris diaphragm in front of each lens, and by a lever communication one was closed as the other opened. By these arrangements it was necessary to maintain the full light in each lantern during the exhibition.

Mr. Dancer, of Manchester, conceived the idea of turning down the light of one lantern simultaneously with turning it up in the other lantern, and constructed a series of taps actuated by one lever, and, immediately after this, M. Noton combined the use of these several taps in one plug and body.

Since then, the dissolving tap has been slightly modified in design, but it has never been improved; on the contrary, durability and effectiveness have been sacrificed for fine appearances, in some of these fancy-looking taps, six ways are opened and closed in line, on the circumference of a plug three-quarters of an inch in diameter, the object being to get a short plug for compactness, and the very thing that ought not to be. Every mechanic knows that a long plug, like a long bearing, works better and holds the lubricant. With six ways in so small a circumference there is too little room

for the tap to keep tight, the slightest dust or grit cuts the plug, and soon it becomes stiff and jams, or permits the passage of gas from one side to the other, and as a result little explosions, by the mixing of the gas in the tap, are not infrequent. A well-made dissolving tap ought to be provided with a long plug, with the oxygen openings separated from those of the hydrogen by at least an inch in the length of the plug, and between these there ought to be a groove turned in the plug, say one-eighth inch wide and deep, with a hole to correspond in the body of the tap, so that, in case the plug did not fit tight, the gases could not mix, but would escape by the hole in the body; and in this arrangement there are only three openings in the circumference of the plug, therefore more tap and more surface to hold a lubricant. In some of these elaborate-looking taps, two bye-passes are provided, one on the oxygen side and another on the coal-gas side; the latter is necessary, to maintain a light; but the former serves no purpose whatever, unless it be to increase the expense.

Another method of changing the pictures, and which is a pleasant change from dissolving, is that of one picture rolling up from the bottom displaying another underneath; this is called the roller-curtain effect. In a biunial lantern it is produced by a thin metal shutter passing between the face of the condenser and the picture. The length of this shutter is just in excess of the distance between the optical systems, so that, where the light from one lantern is shut off, the other is open; thus, where the shutter is half-way, the sky of the top picture is covered and the sky of the bottom picture is showing on the screen. Of course, where this is used, the light in both lanterns must be at full.

Now, it will be seen that when dissolving from one picture to another, this curtain shutter must be entirely removed from the lantern, and when we desire to introduce the curtain effect, the shutter must be introduced when the top light is turned down; but as soon as the shutter covers the top condenser, the light must be turned up, and as the shutter is lowered, the picture in the bottom lantern has the appearance of rolling up from the bottom, displaying another under it (shown by the top lantern). At this stage we have the bottom lantern shut off, and the only way to open it is to draw it up again after the picture has been changed. Thus, the effect of rolling must always be done twice together every time it is used, owing to the fact that the shutter can be removed only from the top.

In a pair of lanterns working side by side, a similar effect can be produced; but, instead of rolling up and down, the pictures are introduced sideways, and have the appearance of an unfurling panorama; and, as the shutter may be introduced or withdrawn from either side, the effect may be produced at any time, and for once only, and done with; as, for instance, when we wish to skip from one subject to another, or from one part of the country to another.

But the finest effects in changing may be described as a cross between dissolving and the roller-curtain. This method was adopted by Mr. Kirnon, the skillful operator to Mr. Rajan, the American lecturer, who visited this country in the early part of the present year.

In the Great Free Trade Hall, Manchester, these lectures had a run of some weeks, and, so far as lantern manipulation, I have never seen that excelled, if ever equalled. The screen was 36 feet square, and the pictures shown to 33 feet square, brilliantly illuminated by limelight.

As seen by the audience, while one picture was on the screen, another began gradually to develop, and when this was full out, the departing picture was not dissolved in the usual way, but, as a friend of mine expressed it, seemed to "fly away," or to be "blown away." Sometimes its departure commenced from the bottom and finished at the top; sometimes it flew away from one corner and then from another, and in a variety of ways it mysteriously vanished; at other times they were quietly and steadily dissolved to the end, and at other times by an instantaneous flash from one to another.

By the kindness of Mr. Rajan and his clever operator, I was permitted to see the whole manipulation of these effects.

Two lanterns were used, placed side by side, the space between the condenser and the objectives was entirely open; while a picture from No. 1 lantern was showing, the dissolving tap was turned, until the next picture was fully developed. Then, by a gentle sweep, an ordinary lens cap was applied to the back of the objective of No. 1 lantern, and, depending upon the way in which this cap was applied first from one side and then the other, so the picture vanished; the dissolving tap was then turned farther to shut off the light of No. 1 lantern, a new slide introduced, and so the whole goes on with variations at the discretion of the operator.

Now, it will be seen that capping the lens from the back of the objective is very different to the rapid or abrupt cut-off by capping in front of the objective.

[From The Paper Mill.]

HOW PAPER IS SIZED.

THE gelatine used for sizing the better classes of writing papers is precisely the same as that so well known to culinary art, remarks Mr. Arnot in his dissertation on the paper-making industry as commonly carried on in Great Britain. It is the soluble portion of hides, bones, horns and hoofs, and is extracted from these substances by warm, but not boiling, water, in copper steam-jacketed vessels. The raw material most largely used by the paper-maker for the preparation of animal size is what is known as "scrows," which are the pieces trimmed off the hides previous to tanning. These parings may be used fresh, but usually the source of supply is distant from the mills where they are consumed, and this renders it necessary to cure them so that putrefaction may be prevented.

The curing is effected by means of lime, and before the "scrows" are treated for the extraction of gelatine the adhering particles must be removed and the material itself softened by steeping in cold water. When the "scrows" are quite free from lime, and indeed restored very much to their original condition, they are put into the copper vessels and dissolved. From 5 to 7 per cent. only of the original weight remains in the form of slime when all the gelatine has been removed.

To effect the complete removal of the gelatine, two or three successive solutions have to be made, and these are run together into tanks or vats, through strainers designed to keep back slimy and other impurities, which would impair the brightness or otherwise injure the character of the size.

The temperature at which "scrows" should be treated, so as to get the gelatine in its purest condition, varies according to the character of the "scrows" themselves, some varieties requiring a higher temperature than others. It may be taken as a general rule that the finer the material is, the lower the temperature that will suffice, and the product will be purer. Inferior "scrows" are more difficult to dissolve, requiring a higher temperature, and, besides, they do not yield such a pure size. About 140 degrees Fahr. should be sufficient for the finer sorts, and from that up to 180 degrees for inferior qualities.

A very small percentage of gelatine dissolved in water will, on cooling, become solid, but a comparatively short exposure to atmospheric influences, especially in warm weather, will cause it to putrefy and become liquid. To prevent this occurring on the large scale, alum is added to the gelatine shortly after it has been discharged from the dissolving vessels. The immediate effect of the alum is to thicken the size; but the element of acidity is also introduced as the alum has naturally an acid reaction, and this is no doubt prejudicial to the paper treated. To neutralize this acidity, as well as to improve the size or facilitate its application to the paper, some paper-makers add white soap to their gelatine. The writer fails to see what good this does, further than neutralizing the acid alum, and, indeed, this neutralizing of the alum means more than is generally supposed, for the result of the admixture of the two substances involves the destruction of both.

The soda of the soap combines with the sulphuric acid of the sulphate of alumina, forming sulphate of soda, and precipitating the alumina. Of course, the oily or fatty matters which were combined with the soda to form soap are set free, and may have some beneficial, though undefined, effect. It becomes a question of some interest, then, how the gelatine is really preserved from putrefaction, when soap is added in sufficient quantity to precipitate the whole of the alumina. It is quite clear that in that case the alum as such no longer exists, and it may be taken as established that neither the sulphate of potash originally associated with the sulphate of alumina in the alum, nor the sulphate of soda formed by the reaction, have any preservative influence. The question just comes to be—does the precipitated alumina or the liberated oils accomplish

this object, or is there really no chemical preservative agent present at all? Of course, it is quite likely that the soap may not be added in proportion equivalent to the alum, and that some sulphate of alumina may be left to exercise a wholesome influence.

The size, on being required for use, is reduced with water and conveyed to the sizing tub, the intermediate arrangements being such as will insure the tub being kept uniformly full. On the tub, or trough, the length of which is co-equal with the width of the drying machine, there is a roller which takes the web of paper down through the size, so as to saturate it thoroughly. The surplus adhering size is removed from the paper by passing it between a pair of rollers, placed so that the excess will flow back into the tub.

ABE LIZZARD ON LANTERN SLIDES.

To the Editors of Anthony's BULLETIN :

IN your issue of November 12th I notice another article signed by "Outsider." In it he changes my statements to suit himself, and then argues from his home-made statements. When he directs his shots at me he should look at me when he does so, and not at himself. I want him to read my original letter on the subject in question, and quote what I said, and not what he thinks I should have stated.

I find in your issue of September 24th an article signed by myself, containing the following: "To show a line of lantern slides on the screen, made by different methods, on wet and dry plates, from dry and wet plate negatives, and then expect the audience to choose between them, and select the process by which they were made, seems to me to be as ridiculous a piece of work as can be attempted, and I wonder that at this day men could be found who would do so." I repeat it, and stand by every word I uttered. As the results proved, according to "Outsider's" words, "Doctor Mason guessed wrong." "Professor Newton promptly guessed wrong." "It was a circus in a quiet way for the outsiders who didn't know and didn't care." In fact, almost his entire letter is full of the "fun," as he terms it, which consisted in laughing at the "guessing" of those who attempted to say by what process a slide was made, from its appearance on the screen. Surely he upholds me completely in my statement.

Further on he quotes me: "To get the sharpest results you require a film almost immeasurably thin." If this is not so, ask any photo-lithographer or photo-engraver why he uses the wet collodion process and not the dry. He will tell you that the film in dry plates is too thick, and as that in a wet plate is immeasurably thin, it suits his purpose much better. He then places this film in contact with the sensitized plate (zinc, copper or glass) in a press made to insure perfect contact. As regards opacity, with the very slow dry plates, you can get them coal black with ordinary developers and no necessity for intensifying.

Then, again, "Outsider" says, "A. Blizzard has an idea. He thinks he made better negatives by the wet-plate process than he can upon dry plates. He looks at his old negatives, old slides and old prints, and compares his own expert work with that," etc. Now, I beg to state that in all I have said or written I defy him to point to one place where I say that I have made one negative or a single slide by either process. He goes on to say, "Because A. Blizzard cannot make a first-class slide upon a dry plate it does not prove that better slides than he ever made have not been produced on such plates." Now, I do not wish to brag in the least, but I will tell you what I will do, viz.: From one of the wet-plate negatives I sent you some days since I

will, before witnesses, make a lantern slide, upon a dry plate, Mr. "Outsider" to do the same. You, Mr. Editor, can send them to whom you please for judgment as to the quality of each, and I will abide by the decision; but I desire that the judge shall be one who appreciates what "detail, sharpness, roundness and softness" are in either a negative or lantern slide, as I claim he must do, to enable him to give a proper decision.

Now, Mr. Editor, finding that Mr. "Outsider" insists upon misquoting me on every point, I shall not continue a useless argument on any such basis, as it is encroaching on space that is valuable to you. I only ask the favor of putting myself right in case I am misquoted, whether accidentally or intentionally, I leave you to judge.

Yours truly,

ABE LIZZARD.

AMIDOL.

To the Editors of the BULLETIN:

GENTLEMEN,—I have for the past week or more been in possession of this new developing agent, and have carefully prepared solution according to the formula published in your issue of September 24th. While admitting that "it is easy of application," that is, readily compounded, I must confess that in my hands it has proved anything but a success. Simplicity of preparation is all very well, but by no means so important a factor as claimed by many. I exposed some half dozen plates, giving varying exposures, and developed the first with amidol. Result: development began fairly, quickly, proceeded to a certain point, and stopped. On fixing, a thin, washy negative rewarded my efforts. Plates similarly exposed, but developed in pyro, crystallos, eikonogen or hydroquinone, yielded good negatives. Thinking that it would be well to have a spectator present, I got a friend, well versed in photography, to come in and help. We threw away previous exposures and made others—some instantaneous, some time. Development with amidol yielded negatives invariably poor, while similarly exposed plates gave much better results with standard developers. Now, two things or one of two may have been at fault. Myself, or the amidol, or both. The amidol was purchased in sealed bottles. Have you experimented with the amidol now on the American market; and, if so, has it in your hands been "capable of producing the highest class of work?" Advance in photography is what we are aiming for, but a multitude of poor developers can but bewilder the amateur and serve no good purpose. I liken amidol to pyrocatechin, and predict for it a similar short existence.

Yours,

H.

OUR ILLUSTRATION.

WE flatter ourselves that canine studies, such as we present to our readers in this issue, are not easily obtainable. The term "expression" may be objected to by some when applied to a dog's face, but certainly a glance at our frontispiece reveals an individuality of countenance that prevents the classification of the subject as *a dog*. Rather, is it *our dog*, the fellow who has a place in our household, and the children's especial pet? Messrs. Pach Bros. are to be congratulated on the success that they have obtained in this somewhat difficult branch of their art; and we, too, consider ourselves fortunate in securing it.

ANTHONY'S Photographic Bulletin.

EDITED BY

Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by **ARTHUR H. ELLIOTT, Ph.D., F.C.S.,**
and a corps of practical assistants.

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AMERICAN INSTITUTE—PHOTOGRAPHIC SECTION.

THE attractive programme issued by the Secretary of the Section brought a large audience to the regular monthly meeting on November 1st. Mr. Henry J. Newton presided.

The Secretary reported the receipt of various photographic periodicals, and a vote of thanks to the donors of the same was accorded. On behalf of the Executive Committee, Mr. Mason announced that at the next meeting, on December 6th, Mr. Newton would discourse on "The Lantern Slide and its Relation to Art," illustrating his remarks with a series of slides.

Mr. F. J. Harrison exhibited an adaptable flange for use where several lenses of different diameters are employed. The principle is that of the iris diaphragm and by its use only one front board is necessary for any number of lenses of various diameters. The Morehouse album was also exhibited. This is the latest thing in albums and admits of any number of leaves, within, of course, reasonable

limits. Prints that are already mounted may be inserted by means of gummed stubs. It opens perfectly flat, at the same time being perfectly rigid in the back. One or more leaves may easily be removed without disturbing the balance. Mr. Harrison also exhibited a lanternoscope. This, he said, was not new, but it was the first that had been shown to the Section. By its means a slide may be examined as to its density and general appearance without the trouble of fixing up a lantern.

Professor D. L. Elmendorf said he had used a lanternoscope for the past six years and had found it of the greatest value in judging of the quality of slides. All his slides passed through that instrument before going into the lantern.

Mr. Becker exhibited a bottle in which developers might be kept away from contact with air, thus avoiding oxidation. A solid cylinder is pushed down into the bottle as the developer is used.

Speaking of the lens adapter exhibited by Mr. Harrison, Mr. Newton said it was a very useful instrument but thought that it should be cheaper in aluminium than in brass. Dr. Elmendorf stated that whenever he had tried to get anything made in aluminium he had invariably found it cost much more than making the same article in brass. It was not in the cost of the metal, but the cost of working it up.

Mr. Partridge said that some six years ago when the desire for aluminium fittings reached almost to a craze he made some investigations. The first thing he met was a field glass mounted in aluminium, which instrument had been across the Atlantic. It certainly had endured everything, but the aluminium looked like zinc, badly corroded. While aluminium resisted acids well, it yielded badly to alkalis. No man that had ever touched aluminium ever wanted to cut a screw out of it. In the pure state he said, it was difficult to work up. The different bronzes were probably better.

Mr. Becker had a marine glass mounted in aluminium, which had for fifteen years resisted all external influences to such an extent as to not require cleaning.

MR. NEWTON—When doctors disagree who shall decide?

Mr. O. G. Mason said that he had occasion to make panoramic pictures, that is, pictures where several prints are joined to make one whole. When the camera is swung on the tripod screw as usually placed, it is impossible

to get the prints to join exactly. But by swinging the camera from a point directly under the front combination of the lens, the taking of the picture from different points of view may be avoided. This he does by screwing a graduated baseboard on the tripod top, and upon this placing the camera, fixing it by means of a screw under the front lens. The camera being set at zero, and the center of picture being in the center of the field, it is swung on either side to the necessary position, and the numbers noted. Now make exposure from zero point and swing camera to each noted number, and the three parts will be found to join correctly.

This concluding the exhibition of apparatus, Mr. Mason said that by the kindness of the Society of Amateur Photographers there would be exhibited a series of slides sent over from England. These slides formed the 1890 prize series of *Photography*, a periodical published in London. The series included clouds, landscapes, marine views, street life and other similar subjects. "On the Dee" was a charming cloud and water study. "The Village Smithy" was a slide full of interest. "Coming through the Rye" needed no title, speaking for itself. The whole series was excellent, and will, doubtless, offer many suggestions to the slide-makers present. Commenting on the figure studies shown, Mr. Mason thought that the fault with Americans was that they made the figures too large. A hearty vote of thanks was passed for the kindness of the Amateur Society in loaning the slides.

The meeting adjourned at 10.15.

THE PHOTOGRAPHIC SOCIETY OF JAPAN.

A REGULAR meeting of the above Society was held on Friday, October 7th, at the rooms of the Geographical Society, Nishikonyacho, Kyobashi, Tokyo, Mr. Edmund R. Holmes in the chair. The minutes of the last meeting were taken as read, as they corresponded with the report published in the *Japan Mail*. After that the following gentlemen were proposed, seconded, and unanimously elected—Messrs. H. Baehr, F. Grosser, J. Schedel, and R. Mitomo. A set of pamphlets entitled: "The Principles of a Photographic Lens Simply Explained," by Messrs. R. & A. Beck, was distributed among the members, and a printing frame, of ingenious construction, by the same firm, was shown. This frame was of metal, except the back, and was of such con-

struction that the whole of the print could be examined at once. A cordial letter was read from the Secretary of the Photo Club, Oravais. The new "Concentric Lens," of Messrs. Ross & Co., was shown by Mr. W. K. Burton, along with work done by it, and by other wide-angle lenses of the same focal length. The new lens did not give absolute definition with the maximum aperture of $f/16$, but it gave exactly the same definition at the edge as at the center of a fairly large-sized plate. With an aperture of $f/22$ it gave absolute sharpness very nearly to the edge of a plate 22 by 12, the lens being 12 inches focus and a flat object at right angles to the axis of the lens being focused. In fact, the field was truly flat, and this was the first lens of which such a statement could be made. A "Universal" lens by the same firm was also shown. This was of the type of the "Rapid Symmetrical," but was twice as rapid. It was an outcome of the new Jena optical glass. Mr. K. Ogawa, as well as Mr. Burton, spoke of its high qualities as a portrait lens. The Foreign Secretary has been asked to report on a sample of Mr. J. B. Obernetter's plates. He had found them very rapid, although not quite up to the rapidity of the most sensitive plates in the market in Japan, and of exceptionally good quality. A very ingenious portable metal tripod stand, each leg going into a small tin box less than 3 inches long, was presented to the Society by Mr. R. Mitomo. A set of small prints on bromide paper was shown by Mr. K. Arito, and were much admired. After a vote of thanks to the Chairman the meeting resolved itself into a conversatione.

W. R. BURTON,

Secretary.

COLUMBUS CAMERA CLUB.

THE Columbus Camera Club will give a large exhibition of photographs at their rooms during the first week in December. Some two hundred and fifty pictures entered in the prize print contest in addition to five prints from choice negatives from each member will make up the club work. In addition to these will be shown a very interesting and beautiful series of pictures, by Prof. Burnham (an honorary member of the club), taken at the Lick Observatory. This series is specially interesting on account of the very superior quality of the photographic work. The subjects include the big telescope, Mt. Hamilton and the Lick Observatory, winter at Mt.

Hamilton, and some very curious and beautiful cloud pictures.

The exhibition will also contain the prize prints of "The American Prize Print Interchange." These include three pictures from each of the camera clubs in the principal American cities.

On December 7th and 8th, the exhibition will be open from 2 to 10 P.M., to the invited friends of the members of the club, and on December 9th, at the same hours, the general public will be given an opportunity to view the exhibition, which will be held in the spacious rooms of the Columbus Camera Club in the Y. M. C. A. building.

The collection of photographs will be the largest and most artistic ever exhibited in Columbus, and will be a revelation to many of our citizens, who have no conception of the interest and beauty of many of the scenes and objects in the vicinity of Columbus.—*Columbus Morning News*.

COLORS FROM COAL TAR.

Prof. WATSON SMITH, of Owens College, Manchester, England, in speaking of colors obtained from coal tar, recently said:

"Formerly they used to rely principally upon vegetable dyes of animal origin. The vegetable or wood dyes, however, had to a large extent disappeared, and there were not many of these with which they needed to trouble their minds, because they had been really only two of these vegetable dyes remaining—indigo and logwood—all other wood replaced, and would be still further replaced, by other materials. There were dyes having been already more or less replaced by coal-tar dyes. Lac dye had been entirely displaced, and the consumption of cochineal had been reduced to probably less than 200 tons per year. A great deal has been said against coal-tar dyes. They were told that these dyes were fugitive and poisonous, and that there could not be produced from them as fine a shade as was obtained from the vegetable dyes. Now, all this was fallacious. If all that had been said against coal-tar colors was true, one would naturally be led to suppose that the consumption of them would decrease. But what was the fact? Why, in the last year the consumption of these coal-tar colors had increased more than 33 per cent. Trade last year was bad all over the world—they hoped that this year it might be better—yet this increase of consumption had taken place, quite exclusively, he should say, in compound colors. No fab-

rics were now dyed in any of the pure colors, and the increase of consumption had taken place in judiciously blending these colors with themselves or with vegetable dyes. A card of 'spring shades, 1887,' being 150 different colors obtained from coal tar, without indigo or any vegetable dyes, was shown. These colors comprise many bright and most delicate shades."—*Progressive Age*.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. Correspondents will please remember this. No attention will be paid to anonymous communications.

Q.—L. A. D. writes: Can you furnish me with a formula for making finished prints of a green color?

*A.—*Either of the following methods may be used: Take ordinary ferro-prussiate paper, print rather lightly, wash well and immerse in the following bath:

| | |
|----------------------|---------------------|
| Water | 8 ounces, |
| Sulphuric acid | $\frac{1}{2}$ dram, |

or make and tone with gold an ordinary silver print; after thorough washing, immerse the print in a water solution of aniline green F. (1 grain to the ounce), and rock constantly until, when laid face upward in a porcelain tray, the desired tint is obtained. The color may be reduced or removed by means of a brush with a 10-grain solution of oxalic acid. If exposed to the strong sunlight, a print colored in this way will gradually fade.

Q.—E. C. Y. writes: Will you kindly inform me as to the extent that "double pictures" have been made, and with what success, etc.? By "double pictures" I mean those taken in sections so as to make it possible to photograph a man holding his own head at arm's length in a platter, for instance.

*A.—*Double pictures are frequently made by many of our amateurs, generally for the sake of the peculiar and startling effect so produced, rather than for any artistic merit that usually lies in them. We have seen, however, some very pretty child studies made in this way which were of a high class of artistic excellence. Two methods are usually used; either by means of a double exposure,

the subject changing position each time and the background being perfectly black, or with a hinged shutter, divided in the middle like a French window, which exposes but one-half of the plate each time. The subject of course changes his position and the background can be of any desired character.

Q.—L. G. J. writes: Please say in the BULLETIN how I can mix dry sulphuric acid, so as to get the same strength as the liquid commercial acid, as I have considerable quantity of the dry acid I would like to use up.

A.—Commercial sulphuric acid has a specific gravity of about 1.840 and contains about 97 per cent. of the pure acid. If you mix your dry acid with water in the proportion of 80 parts of acid to 18 parts of water you will have a liquid of about this strength. Test it with a hydrometer, when made, to see if the specific gravity is 1.840.

Views Caught with the Drop Shutter.

L. C. BALCH, the photographer at St. Johnsbury, Vt., suffered a loss on business, stock and household effects of \$1,400 during a recent fire which destroyed several blocks of business houses in that town. The loss is doubly felt as no insurance was carried.

THE firm of HATTON & SCHLEGEL, photographers at Evansville, Ind., have dissolved partnership and the business will be carried on at the old location by Mr. Hatton.

A FIRE which broke out in the night of the 13th of November in Albany, N. Y., seriously damaged the photographic establishment of F. J. SEVERANCE, of No. 111 North Pearl street. Fortunately, it was confined to the rear of the first story where it was supposed to have originated from a stove. The loss is fully covered by insurance.

W. E. BUEHLER, recently of Philadelphia, has just opened a new studio at 222 and 224 Fifth avenue, McKeesport, Pa., at which location we cordially wish him every success.

WE learn with regret of the demise of Alfred H. Binden, an expert amateur photographer, at his home in Wakefield, Mass., on November 3d. Mr. Binden was especially successful in photographing lightning flashes and secured many interesting and marvelous results.

WILLIAM WEISS, for a long time connected with many of the most prominent studios of this city, has recently opened a printing and retouching establishment at 126 West 23d street, New York City, where he gives his personal attention to all orders.

MISS MARY WILSON ADAMS, the only daughter of Mr. W. Irving Adams, of the Scovill & Adams Company, was married at Montclair, N. J., on October 31st, to W. Palmer Bridgen, of New York City. We tender our sincere congratulations to the happy couple.

TABLE OF CONTENTS.

| | PAGE | | PAGE |
|---|------|--|------|
| ABE LIZZARD ON LANTERN SLIDES.... | 699 | OUR-ILLUSTRATION..... | 700 |
| AMERICAN INSTITUTE—PHOTOGRAPHIC SECTION..... | 701 | PHOTOGRAPHIC RESIDUES, <i>by J. Pike</i> ... | 687 |
| AMIDOL, <i>by H.</i> | 700 | POLYCHROME PROJECTIONS BY MEANS OF NON-COLORED PHOTOGRAPHS, <i>by Léon Vidal</i> | 683 |
| A NEW IMPROVEMENT IN THE PLATINO-TYPE PROCESS, <i>by P. C. Duchochois</i> ... | 678 | PROGRESS OR FASHION, <i>by G. R. Baker</i> ... | 694 |
| COLOR EFFECT IN THE PICTURE AND PHOTOGRAPHY, <i>by F. Stolze</i> | 680 | SMALL LANTERNS AND DISSOLVING VIEWS, <i>by W. I. Chadwick</i> | 695 |
| COLORS FROM COAL TAR..... | 703 | STEREOSCOPIC PHOTOGRAPHY, <i>by G. A. Thomason</i> | 690 |
| COLUMBUS CAMERA CLUB..... | 702 | SUBJECTS FOR LANTERN SLIDES, <i>by Chapman Jones, F. I. C., F. C. S.</i> | 685 |
| EDITORIAL NOTES..... | 675 | THE PHOTOGRAPHIC SOCIETY OF JAPAN. | 702 |
| EXHIBITION OF PHOTOGRAPHS AT THE AMERICAN INSTITUTE FAIR..... | 673 | VIEWS CAUGHT WITH THE DROP SHUTTER..... | 704 |
| GELATINE VERBES STARCH AS A MOUNTANT..... | 689 | WHAT OUR FRIENDS WOULD LIKE TO KNOW..... | 703 |
| HOW PAPER IS SIZED..... | 698 | | |



NEGATIVE BY
JES. G. ROCKWOOD, N. Y.

PRINTED ON N. P. A.
EXTRA BRILLIANT PENSE
ALBUMEN PAPER.

A JUVENILE NEW YORKER.

ANTHONY'S Photographic Bulletin.

EDITORS :

PROF. CHARLES F. CHANDLER, PH.D., LL.D.

PROF. ARTHUR H. ELLIOTT, PH.D., F.C.S.

VOL. XXIII.

DECEMBER 10, 1892.

No. 23.

WINTER PHOTOGRAPHY.

MANY of our amateurs lay aside camera and tripod with the advent of the winter months, confining themselves to lantern work, bromide printing, enlarging and the various other especially winter branches of the art. To these we would say, you are making a mistake ; you are closing your eyes to Nature in some of her grandest forms ; keen winds, Jack Frost, and even snow and ice, are well worth facing for the prizes that she offers at this time of the year.

When the leaves first begin to turn, and the green still predominates—enlivened here and there with a patch of yellow or red, or with edges just tinted; make an exposure, and see the increase of detail in the foliage that the picture will show. Are you near the water where the rich warm browns of the sedge stand out in strong contrast to the still green foliage and grass? It is at these times more than ever that we long for the photographic millennium, a true reproduction of color, obtainable with the same ease as the present monochrome results.

At this season of the year are visible huge banks of fleecy and ominous looking clouds, infrequent at other times. Just before sunset these cloud effects are particularly fine, masses of brilliant colors, light and shade, that produce most desirable cloud negatives for printing in with such pictures as need it, and there are few that cannot be improved by treatment in this way.

There is a treatment of grounds known to landscape gardeners as "planting for winter effect" or "winter landscape." It consists in breaking the sky line or foreground with a judicious mixture of evergreen and deciduous trees. A landscape properly selected to produce an effect of this kind in the picture will be found a task worthy of the skill of the artist. Bold, heavy masses of light and shade may in this way be utilized, while the delicate tracing of the leafless branches against the sky, serves to remove what might otherwise prove too sombre an effect. Allow the white trunk of a silver birch to stand out sharply

against some dark object in the background, while its upper branches are changed to dark slender threads against the high light of the sky.

It has fallen to the lot of many of us after a heavy snowfall to try an exposure, tempted by the glistening drops and icicles, the bright sunlight reflected with dazzling brightness from the snow-covered ground, and the trees overladen and bending far down under the weight of their burden. The first time we wait with impatience for the negative, but what a disappointment the first print brings us. "Nothing, with a few black specks floating aimlessly around in it" was a disgusted verdict once rendered by a disappointed worker and one which seemed to describe the result remarkably well. Unfortunately, this is too often the case and yet there is no good reason why it should be. Remember that in a composition of any kind, balance is needed and conditions must be carefully considered. It is unreasonable to expect that detail in the shadows can be obtained from an exposure sufficiently short to properly render the intense high lights of such a picture. Any object to appear clearly against such a background must be more or less in the nature of a half tone or shadow, and to secure detail in it under such conditions without hopelessly over-exposing the high lights is an impossibility.

On the other hand, if the high lights are over-exposed and detail obtained in the shadows, these same high lights will be weak in the negative and appear as greys in the finished print. Now, grey snow is somewhat of an anomaly, save in our cities when it is frequently black, and a picture representing it as such in bright sunlight is manifestly an absurdity and a failure.

It is by the careful study of our failures that we learn more than by our successes. Success must never come to be looked on as synonymous with perfection. As our experience grows, our ideal must expand with it. To-day's success must mean only something better than yesterday's attempts, otherwise we have reached the egotistical stage and no sooner do we become thus perfect than we begin to retrograde.

But *revenons à nos moutons* and let us see what our first snow-scene failure has taught us. Evidently strong sunlight is not permissible, and the balance between high-light and shadow must be carefully observed, letting the half tones and the blacks predominate in such a way as to remove that patchy unfinished look. To do this perfectly they must be connected rather than isolated, and here Dame Nature steps in and beckons us to the recesses of her woods, by the side of some sluggish brook, rebelling against and half breaking its frozen bonds, with glimpses of mirror-like surfaces reflecting the overhanging boughs of brush and tree heavily laden with their ermine coat, yet preserving their graceful outlines, their undersides coming out sharp and distinct, as black lace upon a foamy surface.

That gnarled and knotted tree trunk, half covered in its white mantle, gives the requisite boldness to the right in the foreground, and serves to accentuate the feathery detail of the undergrowth, while the patches of dwarf hemlock, cropping up everywhere through the snow, break what would otherwise be a foreground of monotonous white.

Select a cloudy day for a picture of this kind, stop the lens down well, and let the exposure be ample, say, three seconds with $f/32$. It will be found advisable to reduce the amount of sky to a small proportion, that seen through the branches being all sufficient. Grey snow, under circumstances such as these,

will not be anomalous, and thus the correct rendering of the lights and shades is rendered easier.

There is something exhilarating about such picture-taking as this; the crisp, biting air, of wonderful clearness after the storm, the almost absolute stillness, even footfalls are muffled in the snow, and the occasional sharp snap of a twig breaks on the ear almost like a pistol shot. Warm clothing, thick gloves and rubber boots are necessities which make all the difference between discomfort and a sense of defying the elements, and keeping dry and warm withal.

If you can find some bold masses of rock, with summits snow-covered and sides only slightly touched here and there, you will have an excellent opportunity for marked contrasts. Secure a surface which the water from the melting snow has darkened, and aim to secure the effect of looking into the sombre and unlighted depths of a forest from some point where a momentary rift in the vegetation overhead only serves to accentuate the gloom beyond. Be careful to avoid a few dark spots of rock cropping out from a snow-covered mass, otherwise the patchy effect will appear again and the whole picture will be marred.

Let the summit be covered and the snow patchy, if you will, upon the dark background of the rock, or the few remaining leaves of some vine or creeper, together with its tendrils standing out in bold relief with the snow which they have retained upon them.

Isn't it nearly time that camera was unpacked, those rubber boots looked up and some spot in the country (you need not go far to find what you want, especially if you live in this city) decided upon, where the next day off is to be spent? Try it once, remember the cautions we have given you and see if the reward is not meet for the deed.

EDITORIAL NOTES.

CITRIC acid has been announced by Liesegang to be an excellent solvent for para-amidophenol. It dissolves it in the proportion of 1 gram of para-amidophenol to 2 grams of a 50 per cent. solution of citric acid at a temperature of 20 degrees C. A developing formula for the citrate so formed is given below :

| | |
|--|----------|
| Para-amidophenol citrate (saturated solution)..... | 1 part. |
| Sodium sulphite (saturated solution)..... | 4 parts. |
| Sodium carbonate (dry)..... | 5 " |
| Caustic potash (10 per cent. solution)..... | 2 " |
| Water | 50 " |

Full exposure and development for ten seconds gives full detail and dense, blue-black images. Brown tones are obtained by rendering a weak solution of para-amidophenol citrate alkaline with caustic potash.

Two cases of "photographic mirage" have recently been reported; one by Mr. Paul Roy, of the Lyceum of Algiers, and the other by Ch. Le Corbeiller, of the Amateur Photographers' Club of Paris. In both of these cases the image was reflected on the fog, prevalent at the time, with sufficient intensity to permit of its being photographed, although invisible to the naked eye. Which may be taken *cum grano salis*.

At a meeting of the Orange Camera Club, held November 21st, a number of the slides rejected by the International Lantern Slide Exhibit were shown and

the reasons for their rejection stated. In the majority of cases this was due to the duplication of the subject in some of the other collections of the Association. Over sixty of the rejected slides were exhibited.

MR. S. R. STODDARD, the well-known publisher of Glens Falls, N. Y., recently gave an illustrated lecture in Newburgh, N. Y. The subject was a trip through the Adirondacks from the source of the Hudson River to the sea, and the slides shown were from negatives made by Mr. Stoddard himself while performing the journey. No comment upon the photographic productions of the lecturer are necessary.

At the last meeting of the San Diego Camera Club several new members were elected, and arrangements for holding a public reception in the near future were completed. The membership is now over thirty, and the club is in a prosperous condition. Over seventy-five slides have been contributed to the exchange to which the club belongs, each of which is accompanied by a brief description of the scene depicted.

THE Duc de Morny has recently contributed to the French War Office a process by which paper of any kind or thickness can receive a photographic print. Eighty copies can be printed per minute at a trifling expense, and certificates, season tickets, passports, etc., can thus bear the photographic portraits of the owner.

THE Springfield (Mass.) Camera Club proposes giving exhibitions of slides from other members of the New England Association on the third Wednesday evening of each month. Three new clubs have joined this association during the past year and the list now comprises the Portland, Lynn, Lowell, Mystic, of Medford; Old Colony, of Rockland; Mattapan, of Dorchester; Boston, Pawtucket, Providence, New Haven, Waterbury, New Britain and Hartford clubs.

THE clouding of the inner surface of microscopic cover glasses has recently been investigated by Herr R. Weber, who finds that only glasses of a certain composition are affected in this way. Those containing excessive amounts of alkali soon lose their luster in the presence of moisture, while those of a slightly greenish tint are the most stable. The moral is obvious.

THE reproduction of photographs by telegraph and their projection on a screen in distant cities is the problem which a syndicate recently formed in Chicago claims to have solved. The exact system is said to have been described in the *Figaro* some three years ago in connection with certain experiments made by a French chemist, M. H. Courtonne, when investigating the subject of telephotography.

THE If Camera Club of Jersey City recently gave a successful lantern slide exhibition in Kessler's Hall. Among the slides shown were several of the Columbian celebration. Mr. Joseph Cottier, of Stevens' Institute, performed various chemical experiments, the results of which were thrown upon a screen, and the evening's entertainment closed with the farce "A Photographic Ruse," by Mr. A. B. Guilford.

WE are in receipt of a beautiful moonlight picture by Mr. H. T. Leucon, of Richmond, Indiana. The subject is "Sand Lake, Michigan," and the distant view of water and hilly shore-line is framed in a mass of delicate shrubbery, silhouetted against the high light of the moon's reflection in the water. It is one of the most perfect examples of its kind that we have ever seen.

WE have recently received from Mr. E. Bierstadt some more examples of his work on chromo-collotypy. One of these is an exceedingly fine reproduction of a water-color, and the others are studies from life with varied color effects. It is certainly remarkable how well he has reproduced these pictures. We hope at some future time to induce him to place his methods of working on record; they certainly deserve to be more widely known, or at least the results he has obtained. Mr. Bierstadt also sends us some fine examples of pictures taken with orthochromatic plates, and, for comparison, others taken at the same time on ordinary plates. The contrast is strikingly in favor of the orthochromatic methods. Some of the pictures consist of views on the Hudson River, and in New York Harbor, giving in the orthochromatic plates the finest effects in detail, distance and clouds, while in the ordinary plates these are either absent or very poorly caught. Reproduction of oil paintings form the other examples, and here, also, the detail in the picture is beautifully brought out by the orthochromatic process.

IN the annual Lantern Slide competition, under the management of the English Journal *Photography*, two members of the Society of Amateur Photographers of New York were awarded prizes. The successful gentlemen were William B. Post and Alfred Stieglitz who received two and three prizes respectively and were the only competitors from the United States. The judges were H. R. Leach, Midland Camera Club; A. V. Leeson, Birmingham Photographic Society, and Henry Sturmev, editor of *Photography*.

A CASE which has recently come under our notice will, we think, prove a timely warning to some of our readers. Certain lenses of inferior make, are being transformed into so-called "Dallmeyer's," by changing the engraving on the tube so as to read "J. H. Dallmeyer, N. Y." As this is rather clumsily done, no dealer would be deceived by it, and we would advise all purchasers of second-hand lenses to examine them carefully, to avoid having this imposition practiced upon them.

WE have received from the Honorary Secretary of the Oldham Photographic Society a tastefully gotten-up annual report, containing a list of members and library catalogue, together with the rambles for the past year. The members certainly have occasion to congratulate themselves on the prosperous condition of their society.

THE Waterbury Photographic Society recently selected a set of slides for the New England Interchange. The collection is an excellent one, and shows in a marked degree the progress made by the society during the past year.

THE exhibition of lantern slides of the Society of Amateur Photographers of New York was held on Friday evening, November 25, 1892. Those exhib-

ited were exclusively the work of the members of the society, and were greatly appreciated by a numerous audience.

Mr. IVES, inventor of the heliochromoscope, exhibited his new "device" for carrying out his process of color photography at the rooms of the New York Camera Club on Monday, November 21st. In spite of the inclement weather, the attendance was large, and the demonstration of one of the most successful attempts to solve the problem of photographic color reproduction was in every way a decided success.

THE journal *Good Roads* offers three prizes, aggregating \$100 in all, for a collection of photographs of bad roads, as follows: One prize of \$50 for the best collection of not less than three photographs of bad roads; one prize of \$30 for the second best collection, and one prize of \$20 for the third best collection. The conditions accompanying this offer will be furnished by the editor, Isaac B. Potter, Potter Building, New York. It may be to the interest of some of our readers to enter this competition, and by so doing they will at the same time confer a benefit upon the community at large.

THE Newark Camera Club held its annual fall lantern slide exhibition at Association Hall on November 19th. Among the views shown were a set of the Columbian Celebration in New York, and also a series of views in the Catskill Mountains.

SOME of the recent productions of Mr. Lippmann are said to exhibit marvelous results. Pictures of stained glass windows, draperies, oranges, etc., have been reproduced with wonderful fidelity as to color upon layers of albumino bromide of silver, rendered orthochromatic by azaline and cyanine.

THE Camera Club of Hartford recently exhibited a collection of fifty charcoal studies by D. F. Wentworth, which contained many examples of strikingly good work. An exhibition of this kind is useful in showing artistic composition to the members of any club, and we wonder that it is not more frequently done.

THE foundation for the new Bruce Photographic Telescope, at Harvard, is being laid. This new instrument is to have a 24-inch object glass, making it the largest instrument of its kind in the world. It will remain at Cambridge for several years, after which it will be sent to the college observatory in South America, where, owing to the exceptional clearness of the air, observations can be taken under the most favorable circumstances.

ANOTHER use for the camera has been found by a coroner's physician, who proposes to photograph all unknown corpses which he may be called upon to examine. This is certainly a good idea, and will greatly facilitate identification in cases of this kind. We believe something of this kind has been done by Mr. O. G. Mason, of Bellevue Hospital, New York, for some time past.

Col. V. M. WILCOX, the President of E. & H. T. Anthony & Co., delivered

a lecture at the Phillips' Presbyterian Church, New York City, on November 11th, in which he gave some of his personal recollections of the war. The Colonel is always interesting and the present occasion was no exception. The church was well filled and the audience gave him an enthusiastic reception.

LETTER FROM GERMANY.

BY DR. H. W. VOGEL.

Le Figaro Photographe.—Photography and Truth.

FOR years it has been the custom of the favorite journal of the Parisians, *Le Figaro*, to publish illustrated numbers at the opening of the "salons" for the winter season, for Christmas, and on the occasion of World's Exhibitions, which, on account of their excellent and graphic execution, are greatly admired in artistic circles at home and abroad.

This year *Figaro* has issued such a number in honor of the International Photographic Exhibition at Paris. Characteristic of the latter is the fact that the German photographers and amateurs have not been invited to it. Still, the appearance of *Le Figaro Photographe* was looked for with eagerness, particularly as, contrary to previous custom, it had been announced four weeks ahead of time by circulars in all the leading foreign journals. Considering the fact that there are 500,000 amateurs in England, about an equal number in America, and in France and Germany some 350,000 in each country, *Le Figaro Photographe* was sure of a ready sale. This number, so pompously announced, is now before us. It is an excellent example of French chauvinism, with the most ridiculous scientific and historical blunders, intentionally or unintentionally made. That photography is called "une invention Française," we with pleasure agree with *Figaro*. He might have even cited the proud words of Arago, in 1839: "France has adopted the invention of Daguerre, and has presented it to the whole world"; but it seems *Figaro* was not acquainted with this sentence, although the members of the Academy, Jannsen and Marey, are mentioned as contributors of this journal. My colleague, Mr. Schrank, in Vienna, editor of the *Photographische Correspondenz*, an Austrian by birth, says:

"We are of the opinion that such a work should have been published under the guidance of Davanne, Fabre, or Léon Vidal, if it aims to higher pretensions than to acquaint the public at large with a general comprehension of the matter."

Figaro in his historical review places two names, Niépce and Lippmann, Paris, at the head. Niépce made some very interesting experiments, but they were not generally known until after his death. He was the originator of Heliography. Lippmann was not the inventor of photography in natural colors, as ascribed to him by *Figaro*, but only the first one who succeeded in 1890 to fix these pictures. He has not passed yet beyond the sphere of experimentalism. Nothing is said about Johann Heinrich Schultze, Dr. Med. in Halle a./S., who produced black photographs in 1887, and Seebeck, who produced colored photographs in 1810. Silence is kept about Wedgwood's and Davy's published labors in photography in 1802. The name of Cary Lea is looked for in vain in the list of inventors, so that Professor Dore's remark is involuntarily called to mind: "Outside of France nothing must be invented; but should this be the

case after all, a Frenchman will quickly invent the same thing over again." After the first two names on the list follow the principal inventors as well as such of less renown, with a description of their nationality. Of the five divisions, four are headed by Niépce, the fifth by the writer of this—a born "Prussian"—as Viennese! Steinheil, from Munich, is also mentioned as from Vienna; the German Martens, inventor of the panoramic apparatus, is entered without designation of nationality. Talbot and Daguerre rank only second. We will not dispute that Daguerre learned a great deal from Niépce. But Daguerre is the inventor of photographic development, that process whereby the time of exposure was reduced more than a hundred times, and only thereby has photography reached its present elevation. He should have been placed at the head of all inventors.

Figaro says with a certain emphasis: "Photography is a French science," because thirty-four of the forty-eight inventors mentioned by him are French! The patent lists, however, show that only half as many "photographic" inventions have been patented by Frenchmen as by foreigners.

But the true test, says *Figaro*, is not the statistical, but the "moral," and now he gives an imaginary table as "reproduction exacte de la vérité," by counting five for France, two for England (Bacon and Talbot), one for Austria (The Prussian Vogel), one for Italy (L. da Vinci), one for Greece (Aristotle), as principal inventors. Names like Petzgoal, Pretsch, Mariot, Eder, are left out entirely. What Aristotle, Leonardo and Bacon have done for photography may be only known to the gods and *Figaro*.

America and Germany are entirely overlooked. Do the United States deserve such treatment? Have they not always shown a certain gratitude towards France? The names of the many cities and mountains called Lafayette are sufficient proof.

Now follows a number of portraits of persons who have been actively engaged in photography. Whether they are correct I do not know. I can only state that under the picture of the Hungarian photographer Verres the name of Vogel is seen. *Figaro* calls particular attention to the picture of a Mr. Courtonne, and is "heureux de jeter à la gloire ce nom hier inconnu." This young man, whose name yesterday was unknown to the world, is said to have invented a "telephot," upon whose light sensitive membrane a picture is projected, which is obtained again in the receiving telephot. "To-morrow," says *Figaro*, "the 'telephoty' of a gentleman will be seen in Paris, who smokes in St. Petersburg."

Among the many well-executed zinc high etchings, the entrance of General Boulanger into Fournier is remarkable. We should think that France had sufficient cause to forget this political clown who had such a tragic end. But the most striking picture is a colored print.

As German, I abstain from all criticism. But I will quote the words of my colleague, the Austrian Schrank. He says:

"We pass over many things to come to an illustration which is characteristic of the present France. This picture represents glass-painting in colors, executed in the gallery of Lemercier. The subject is the reunion of Alsace-Lorraine with France. The genius of France presses two youthful figures to his bosom; in the background an eagle is being stamped upon. To the left is the 'French Rhine,' and from there one has a view of some German cathedrals.

For the sake of better recognition it has the inscriptions: Strassburg, Mayence, Cologne, Metz," etc.

It is hereby seen that the French desire a little more than Alsace-Lorraine.

Schrank says: "On top is 1870 (as date of the loss), and below 18...., this being intended for the day of reunion. The conception of this picture by the German public will be a little different from that of France. As chromolithography, the picture is not bad; as drawing, it may be considered as ordinary work; but as part of the festive number of an international exhibition it does not qualify at all."

As it lacks only eight years yet to the end of this century, and France will require some years thereof for a preparation of the world's exhibition in 1900, they will have to hurry a little with their reunion. Whether their Russian ally will take for them the Alsatian chestnuts from the fire we consider very doubtful. *Figaro* himself says: "Alliance ou flint?"

Schrank continues:

"From Belgium we receive just now the invitations for a union of all interested in photography to a world's union, in which, naturally, the French would play an important part. If it was a great neglect not to invite the German photographers directly to the present exhibition, this new publication is certainly not suited to bring on an approach; yes, it is questionable whether a union can be formed from elements representing such opposition."

True, reproduction is praised as a particular advantage of photography.

This idea is generally recognized as being correct, although in the first edition of Vogel's text-book of photography, 1870, the truthfulness of photography is seriously doubted, and demonstrated by examples of photographic untruthfulness, as shown to the reader. Still, a great many believe in the truthfulness of photography, pass over striking mistakes in photography, declare them even as the pure truth, and explain the opposite idea as a deception of the eye.

It should always be considered that photography is only a transformation from the plastic to the flat surface, and that this flat surface which conjures bodies before our eyes, is, so to speak, not substantial at all. The relief which we imagine we perceive is based upon deception all the same, whether the picture is painted or photographed. The transformation from the relief to the flat in photography takes place according to certain mathematical rules, which should be observed. These rules (the central perspective) we consider as being correct in painting, because we are accustomed to such perspective representations since our schooldays; we grew up with them, and feel too willingly inclined to consider them as being correct. But that the central perspective does by no means always give a correct transformation into the flat, corresponding with the impression which a schooled eye has from Nature, we have shown in a previous article.

Photography is, besides, a translation of the colored nature into black, and that such a translation is subject to much incorrectness is not pointed out by us alone. One of the worst of these errors has its origin in the fact, that the ordinary photographic plate is most sensitive to that kind of colored light (blue), which is perceived by our eye as dark, and has for yellow, which to our eye looks brightest, the least sensitiveness.

The color-sensitive plate has removed this defect considerably, but it cannot do it entirely. The great number of color-sensitive plates still lack sufficient

red sensitiveness, and the dark green also does not always act with the necessary power. Still, we recognize the present approach toward natural truthfulness as a great advance.

But color-sensitive plates are by no means generally applied. The blue sensitive, yellow, green and red blind plates are used yet in great quantities, and if the incorrect tone-gradations which they give are not perceived, it proves only that the public at large has less perception of the gradation of brightness of the colors in Nature than for the figurative outlines.

Now, a third element approaches. From several sides the attempt has been made to reproduce Nature in colors. Colors are actually obtained, but that these colors are not always true to Nature, we have proven in our article, page 205, "Photo Mittheilungen," 1891.

The recent investigations by Krone have confirmed this, and even if the printing process in natural colors should be more fortunate, deviations will still exist, as we have not yet succeeded in making a plate sensitive to every part of the spectrum. In the same degree, as the rapidly developing color-industry furnished new sensitizers and new printing colors, we will also approach Nature in this point nearer and nearer.

[From Our Special Correspondent.]

ENGLISH NOTES.

At the present moment there are three photographic exhibitions of considerable interest open in London. The first of these is that of the Photographic Society of Great Britain, which dates back to the year 1853, and is held in the Gallery of the Royal Society of Artists in Water-Colors, in Pall Mall. Owing to certain dissensions in connection with the exhibition of 1891 some of our best workers—and more especially those who represent the "artistic" side of photography—including the Robinsons (father and son), Sutcliffe, Lyddell Sawyer, George Davison, Vanderweyde, Horsley Hinton, etc., are not represented. There is plenty of good average work, however, the number of exhibitors being just over two hundred; about six hundred pictures are hung, and about two hundred and fifty were rejected. No fewer than seventeen medals were awarded (as compared with eight last year), the winners being Karl Greger, B. G. Wilkinson, Jr., W. Bedford, J. Gale, A. R. Dresser, H. Yeo, F. Muller, J. E. Austin, H. Stevens, Mrs. Main, J. H. Roller, W. M. Warnerke, Elliott & Son, Autotype Co., E. G. Lee (for lantern slides), and Taylor & Hobson (for apparatus). The biggest picture in the show is a carbon enlargement, measuring 7 x 5 feet, of a breaking wave, made by Elliott & Co., from a whole plate negative by Birt Acres. The large picture of Mont Blanc, taken by Boissonnas from a distance of 56 miles, with Dallmeyer's telephoto lens, attracted general attention, and was a splendid exemplification of the advantage of this new and valuable optical instrument. The series of lantern shows held in connection with this exhibition has been very successful, and the total attendance of visitors during the month has been 7,500.

The exhibition of the London Camera Club, held in the splendid and newly decorated club-house in Charing Cross Road, contains work from most of the men who are not represented in Pall Mall. There are about eighty exhibitors—all men of mark—and these have contributed about two hundred photographs. The object of the Club Committee has been to illustrate the pictorial

and artistic capabilities of photography, and the result is a great and unqualified success. It is here, too, that Mr. Vanderweyde shows the results of his "photo-corrector," an optical arrangement by which the relative dimensions of the parts of a photograph may be altered at will; then the hands and feet (in a portrait) can be diminished in size, the waist contracted, etc. It will be seen that there are great possibilities, both for good and for evil, in this invention, the details of which are not yet disclosed.

The third exhibition is the "one-man" show, by Mr. F. Hollyer, in the Dudley Gallery, Piccadilly, of two hundred of his reproductions (all printed in platinotype) of paintings by old and modern masters, including Rubens, Corot, Raphael, Burne, Jones (sixty), G. F. Watts (over eighty), Rossetti, etc. The work is most admirably done, and we think the copies are in advance of any other mode of reproduction (they are wholly untouched), as bringing the possessor of each print more directly in contact with the artist.

Gelatino chloride papers continue to progress in favor, and it almost looks as though, what between gelatine on the one hand and platinotype on the other, the days of albumen were numbered. And yet albumen has been a good servant in its day, and when albumen prints were carefully treated, darkly printed, deeply toned, doubly fixed in baths of fresh, strong hypo, well washed, and so framed or kept as to be protected from air and moisture, they have been found capable of retaining their pristine beauty for long periods—over thirty years certainly. But all albumen contains sulphur, and the albumen further forms a complex compound with the silver (albuminate of silver) which is extremely difficult to get entirely rid of, and then the silver salt and the sulphur re-act upon one another, and, with the aid of any traces of hypo which may be present, produce the yellowing, spotting and fading so characteristic of ninety-nine out of every one hundred average albumen prints more than two or three years old. If the price of the platinotype paper could be reduced (it is now, roughly, twice as costly as silver paper), it ought to be and would be generally adopted, and with the recent reduction by about one-half of the cost of metallic platinum, and in view of the great extension in custom which a reduction of the price would bring about, one may hope that the holders of the platinotype patents may yet see their way to a measure which would be so popular. In walking round the recent photographic exhibitions I could but note the growing popularity of sepia platinotypes. It is believed that this trick is obtained by the use of mercury in some form or other. The new cold bath platinotype paper is now practically the variety most used; but it certainly requires deeper printing than the old hot-bath method, and takes quite as long to print as silver paper. But when once this is understood, the proportion of spoiled prints is very much smaller than was formerly the case. In connection with this point Mr. F. FitzPayne recently gave to the Camera Club the following method of toning and improving under-printed platinotypes, by which any color, from a nice brown to a Bartolozzi red, can be attained—

A.

| | |
|---------------------------|------------|
| Uranium nitrate | 10 grains. |
| Glacial acetic acid | 1 dram. |
| Water | 5 ounces. |

B.

| | |
|---------------------------------|------------|
| Ferricyanide of potassium | 10 grains. |
| Glacial acetic acid | 1 dram. |
| Water | 5 ounces. |

Mix in equal quantities just before using. Care must be taken to previously eliminate all traces of iron from the prints, which may be done by giving them an extra bath of hydrochloric acid of double the usual strength.

An officer connected with the Naval Exhibition held last year in London has patented (in all civilized countries) a method of advertising *upon the clouds* by means of a special lantern fitted with the electric light. When natural clouds are not available, artificial ones made by jets of steam are used, and the results are very striking.

The approach of the lantern season, and the growing importance of the lantern as a means of amusement and instruction, are shown by the fact that more than one photographic paper has commenced to give special "lantern supplements." It still seems not to be known to many lecturers that the lantern can be used quite well for class instruction in the *daytime*, and without darkening the room, provided the sheet is furnished with a projecting screen or curtain, to prevent the direct light from windows, etc., falling upon it.

The binding of lantern slides is one of the little matters which cause considerable trouble to those who handle their slides frequently. The ordinary paper strips are often coated with gum which "won't stick," and the paper itself frays out and comes to pieces. The first evil can be cured by giving the strips an additional coating of that splendid adhesive, "Lepage's liquid glue," to which a few drops of oil of lavender should be added. And after the slides have been mounted and are dry, the binding should be well varnished. For these hints I am indebted to an article by the Hon. Mr. St. Clair in the "Journal of the Photographic Society of India."

The new method of packing dry plates which has been adopted for the smaller sizes of plates by Marion & Co. is well worthy of notice. The glass is cut (after coating) and broken, but the film is left unbroken. The plate is then folded upon itself, so that the faces of the films are in contact. When required for use the film is broken by simply bending the plate the other way. When plates are packed by means of slips of paper placed between the edges, air has access to the film; and when tissue paper is used, it often seems to cause visible markings; but in the plan now suggested both these objections are obviated.

Dry-plate makers are so increasing the sensitiveness of their plates that instantaneous photography will soon be nearly as practicable in winter as in summer. The recent issues of the "Lightning" plates of the new plate-making firm of Cadett & Neall show an actinometer number on Hurter and Driffield's scale of 88 (or 135 on Watkins' scale). This is marvelous, and is fully confirmed to me by actual use. But as for hand-camera work, I am using a shutter made specially for me by the Thornton-Pickard Co., and which has a (true) maximum speed of the two-hundredth part of a second. I must add to the list of those who thank our manufacturers for their splendid and reliable plates the name of

TALBOT ARCHER.

SCHOOLMA'AM—Why was it that his great discovery was not properly appreciated until long after Columbus was dead?

Nineteenth Century Schoolboy—Because he didn't advertise.—*Puck*.

A MAN never realizes how much furniture he owns until he tries to walk rapidly through his house in the dark.—*Puck*.

POLYCHROME PROJECTIONS BY MEANS OF NON-COLORED PHOTOGRAPHS.

BY LÉON VIDAL.

(Continued.)

For the verification of the process of the synthesis of colors, suggested by Cros and Ducos-du-Hauron in 1869, we relied on the improvements recently brought forward in the preparation of orthochromatic plates, and it was when we noticed that by the aid of certain preparations we could obtain a satisfactory selection of colors that we thought we could venture to experiment in the way of polychrome projections. We had from the beginning to bring about the desired selection in such conditions that three negatives could represent, each one for itself, the sum total of different radiations of a polychrome subject. After many attempts, we arrived at a mode of operation which appeared to us, if not perfect, yet at least sufficient to proceed further and to verify the facts foreseen by the two above-mentioned inventors.

And, in effect, after an agreement with Mr. Moltenia, who could place at our disposal a triple lantern, we were enabled to show before the large audience which filled the great amphitheater of the National Conservatory of Arts and Trades, on February 7, 1892, the magical effect produced by the projection of a bouquet of flowers with all its colors. After that, numerous subjects of all kinds, paintings, dead subjects, reproductions of views and landscapes, furnished a demonstration full of promise in support of the exactness of the synthetic means based on the employment of projections.

The complete work comprises the following different operations :

- (1) The taking of negatives.
- (2) The printing of diapositives.
- (3) The projection by triple lantern through differently colored media.

Three different negatives appear to be sufficient. On this subject there may be food for discussion, and the necessity of a fourth negative might be shown, but it is to be believed, until there is proof to the contrary, that we can do without it, and it is to be hoped that this possibility may be real, in view of the greater complications that this fourth factor would bring about, when it is already enough to have to do with three.

In order that each of these three negatives may have the proper analytical value that should belong to it, in view of the end to be attained, it is necessary that the three should represent perfectly the sum total of the three fundamental colors—that is, violet-blue, cyanate-green and orange-red, which, by their combinations, may reproduce all the variety of colors.

Every process conducive to a good selection of this kind, whether it be obtained on only one sensitive plate or on several plates, having different properties, may be considered as good, and nothing should be said in absolute against it.

In our first experiments there were employed three kinds of plates—that is, the so-called ordinary plate, an orthochromatic plate sensitive to yellow and to green, and, lastly, a plate sensitive to red and yellow.

The mediums interposed in front of each plate were in the same order—violet, red and orange-yellow.

The time of exposure naturally varied with the color of the medium interposed. Thus, taking a second as a unit, it was of one second for the ordinary

plate, of three seconds for the plate sensitive to yellow, and of three minutes for the plate sensitive to red.

These figures are given to show the relation of one to another. It is evident that if the first exposure is only of $\frac{1}{50}$ th of a second, the second will be of $\frac{3}{50}$ ths, and the 3d $\frac{18}{50}$ ths—that is, about three seconds. With other colored mediums the relation would be changed.

The duration of these exposures excludes, for the time being, instantaneous work, but it may be that we shall come to that by means of some improvements, and in that case the operation would be in the manner done by Mr. Marcy with his photochromographic apparatus, only with less difficulties, as the total number of proofs to be obtained successively within a given fraction of a second will be reduced to three.

Once the negative is obtained, it is necessary to print the diapositives, either by contact or by any other manner. The plates which we have used on our experiments are Ilford's, and bear the mark "Alpha."

The printing of these positives naturally constitute a new series of three variable elements. The results may be modified infinitely according to the degrees of intensity of each diapositive. In this, as is the case with the taking of negatives, practice makes perfect. One soon becomes able to know the degree of intensity at which it is convenient to stop in developing.

The selection of colored mediums, of course, requires especial attention, as it would not do to take hap-hazard any blue, red or green.

The essential condition of this choice is that the projection of the three color discs on the screen should form a white on blending. On the other hand, it is necessary that the three colors selected should be as near as possible to the equivalent zone of the spectrum. The blue should have a tendency to violet; the green should be nearly the same as the cyanate-green of the spectrum; lastly, the red should be as near as possible to the orange red of the spectrum.

In certain cases, one may have recourse, with regard to some determined color, to mediums giving other colorations than the regular ones.

The projecting apparatus should have three lenses, and three holders that can be independent one from the other, and should be so disposed that the reflection may be effected on the screen in the best and most rapid manner possible. A disposition which would allow the immediate and simultaneous reflection on the introduction in the lantern of the diapositive holders would evidently be the best. It seems that we ought to attain that, as that is a mere question of construction, and our manufacturers produce works much more difficult and complicated.

As to the light, it can be triple. Each one of the bodies of the lantern having its own, which allows the operator to regulate at will the intensity of each focus with regard to a desired effect; or it may be single, in which case the intensity, with regard to each objective, would be regulated by diaphragms of varied openings.

In order to give an idea as complete as possible of the results obtained by this method of projection, divers subjects, of entirely different nature, have been projected successively, and the assemblage have been able to notice the richness, the infinite variety and the brilliancy of colors of the images projected. It was not necessary to enter into long explanations in the presence of so competent an audience thus enlightened, in order to make them appreciate the numerous and

useful applications which arts and science, and even manufactures, may make of this precious method of reproducing, even if it be in a fugitive and temporary manner, the colors of Nature, those of works of art, and of scientific subjects.

Thus they can be reclaimed, copied, shown and described to an entire audience, and even their recollections perpetuated, by keeping protected from all alterations the chromogram; that is, the set of three diapositives, analytic depositaries of the effect of real colors, by which, through a simple process of synthesis one can at will restore the original colors, the same as at any desired moment we can reproduce on the phonogram the sound and the voice which were entrusted to it.

These applications are full of promise for the future, and we should not be, therefore, surprised at the interest which they excite wherever they are demonstrated to an intelligent public, anxious to realize all progress.

[From *Photographische Nachrichten*.]

COLOR EFFECT IN THE PICTURE AND PHOTOGRAPHY.

BY F. STOLZE.

(*Continued.*)

3. *Yellow*.—Yellow is the lightest color for which brightness is such an essential condition, that we are accustomed to designate every shade of yellow which passes beyond a certain degree of saturation as brown. Yellow is one of the most frequent colors in landscapes besides blue and green. It is so conspicuous sometimes in Southern countries that the total character of the picture—aside from the sky—has to be designated as yellow. Pure yellow should be free from every orange tint. This, of course, is only for the eye, and not for the spectroscope.

I know at least of no yellow, which, spectroscopically tested, would not admit the passage of all rays from red to the end of green. Red and green being complementary to white, the colored impression of yellow remains. The reason why in yellow pigments a red tint should be avoided is, that such yellow colors mixed with blue will not give such clear tints as pure yellow. But as the secondary colors are mostly mixed from the primary ones, and, under certain circumstances, have to be mixed, this condition can hardly be avoided.

4. *Green*.—The pure spectral green finds no complementary color in the spectrum, being with purple complementary to white. But the violet corresponds to the yellow-green, and the spectral red to the blue-green. The green is on the boundary between light and shadow colors, a circumstance to which may be due its beneficent influence upon the human eye. Wherever there is vegetation, it is the prime condition in the color-character of the landscape. However, a pure green is very seldom seen and appears only here and there between more broken tones. Nothing is more absurd than those salad-green meadows and forests, which are represented by some artists as pictures of reality. Nature is nowhere dazzling, but harmonizes the different tones in a wonderful manner.

It has already been mentioned that in water-color painting the green is mixed almost exclusively from yellow and blue.

For this purpose, the latter should be absolutely free from any violet tints like indigo or ultramarine, as it is impossible to mix with such a blue a handsome green which will meet all requirements. Much better is a blue of the tone of prussian blue, which, with pure yellow, permits the mixture of a pure green, and which, when mixed with red, furnishes more broken tones.

Yellow-green is a light color, blue-green a shadow color. The former plays, therefore, frequently a prominent part on the evening sky near the horizon as light source. Yellow-green in its essential parts is also found in intensely illuminated foliage and grass, while the shadows have a bluish tone. Regular blue-green vegetation has only an agreeable effect by contrast, and it should, therefore, never appear in masses where a charming and graceful impression is desired. For instance: Olive and palm woods give an exceedingly melancholy effect with their blue-green tones.

5. *Blue*.—Blue is the proper shadow color. It is not in contradiction herewith that the blue sky of our country plays so often the part of the light source. This sky-blue is almost always a light white-gray mixed with a little blue, in which, therefore, the bright colors are only represented a little weaker than the blues. Quite different will be the picture in highlands and in more northern countries. Here, the saturated intense blue of the sky will, indeed, make the impression of darkness in comparison to surfaces lit by the sun, its very energetic action making a vibrating impression to the eye from which originates the wonderful purity and saturation of color. A similar impression we get by looking at larger surfaces painted with the intense modern tar colors.

This peculiar character of the sky at different latitudes exercises the greatest influence upon light and color conditions of the whole landscape. Not only that all sunlit parts in tropical countries appear more prominent by contrast, so that the intense sunlight will show in a most glaring way, but the shadows are also, in opposition, much more weakly illuminated, and show thereby not, as in a moderate climate, neutral, but decidedly blue, tones, which, at a distance, concentrate to a wonderful and magnificent depth. In those zones with a wonderful clearness of the air the shadows derive their light solely from the deep blue sky and not from vapor particles floating in the air and reflecting the sunlight. And not only in the shadows is shown the supremacy of the blue color. May not the atmosphere be considered blue in consequence of the ozone contained therein; the blue distance will always appear much clearer and richer in color the more saturated the blue of the sky appears. No matter how deep blue the sky may be, the shadows will only appear quite blue and dark, if it is interrupted by any clouds. Then, in spite of the intense sunlight, it will frequently be the case, that on account of the deep, dark shadows in the foreground, the exposure will be of much longer duration than in our latitude with less brilliant colors. This is particularly the case with portraits taken in the shade, and hardness of pictures can, therefore, in those countries, be less avoided than with us. In colored photography, where the blue is taken by itself, this will be entirely different. One will be enabled to reproduce the impression of transparency, as peculiar to blue shadows, in all its strength, without the appearance of any heaviness.

6. *Violet*.—Violet is still a shadow-color, but, after all, is nearer related to light, than blue. The lights of the distances show, therefore, in contrast to the deep-blue shadows, obedient to the fundamental law, hence they will always be-

come bluer with increasing distance, and will, therefore, pass gradually from a red-violet to deeper blue sub-violet. This connection of the more or less red light with the deep-blue shadows has a particular charm, and imparts to distant mountain scenery that glowing and glittering character which is so well known, and awakens, particularly in low latitudes, the impression as though the mountains were built up of amethysts and sapphires. But the violet color, on the other hand, plays a prominent part in the shadows.

Before they assume pure blue tones in the distance, they pass, commencing from the depths of the foreground guarding the local color, all brownish and violet shades, only that these violet shadow-tones make their appearance already where in the light the local color is yet hardly perceptibly discolored.

It is to be observed, that of all colors, when broken, the violet is nearest to neutral gray, and is therefore particularly suitable as the shadow-tone of all local tones discolored in the middle ground, while the blue shadow belongs to the light tone changed to violet. The violet has advanced, therefore, in the shadows a full color of the spectral scales further towards the front, than in the lights.

It is unnecessary to speak of the infinite number of broken tones in a similar manner, as the pure colors have been explained. They are more or less closely attached to the latter, and have already partly been mentioned with these. They furnish, where the light tones belong to the pure colors, the endless variety of shadow-tones in the foreground, and not only these, but also the largest part of the light tones. Thus it happens, that the pure colors appear in the picture only in special cases, as the most brilliant points, blended by the infinity of intermediate tones to a harmonious whole. In the finished painting the eye of the layman generally does not observe that they are broken tones which in consequence of contrast-effect only appear as pure ones and thus deceive the inexperienced eye. But the artist, especially the water-colorist, who works with pure colors, knows how to lay one color on another of quite different character, to obtain finally the most brilliant effect of the apparently pure color. And, after all, even he is surprised, when in a color-lichtdruck with three plates, he sees how apparently pure sky-blue includes the blue of the blue plate and yellow and red tones in the corresponding plates, although they are, of course, not as prominent as the blue. And thus we find in the same way in emerald green of the meadow, red tones, blue and red in the yellow of the desert, in short, everywhere a blending of all colors. Here photography can bring to light passages and tones, which remained invisible to the eye of the greatest artist, and thus it can become his tutor.

One thing, of course, should be considered in this connection. The color-lichtdruck is worked with three plates, comprising all other tones from the same. The green, for instance, is here no primary, but a secondary, color, although it has to be recognized as a pure color. Here we meet the fact again, that the pure secondary colors by addition of a primary one not contained in them (in green therefore the red) are not broken, while the three primary pure colors by addition of another primary color are made secondary ones and are then changed only by mixture with the third into broken ones. This is the remarkable behaviour of the mix-colors, which proves that the difference between primary and secondary colors is not only well founded in the practically applied artists' colors, but also deeply in the character of these spectral colors, a difference which science has so far been unsuccessful in trying to penetrate.

Every painting has, according to the predominating color-tone, a particular character, and this is shown nowhere more distinctly than in the landscape, which thereby obtains its character with regard to seasons, time of day and night, climate and finally geographical latitude. Therefore, it is much less needed for the landscape than for the portrait and all compositions with figures. For this reason it may surely be predicted, that the time cannot be far distant when photographic colored landscapes will be made, the complete copy of reality.

HYDROTYPY.

BY P. C. DUCHOCHOIS.

HYDROTYPY is a process which was devised by Charles Cros. It is not new, and is little known, even among the old American photographers, not having been published in this country to our knowledge.

It is based on one of the most useful properties of gelatine applied in the photo-mechanical printing process, that of becoming insoluble and repelling water from the parts which have been acted upon by light in presence of a bichromate, while the others, those not impressed, remain soluble and permeable. Therefore, a gelatine film sensitized in a bath of potassium or of ammonium bichromate, and exposed, when dry, to the luminous influence, absorbs any colored solution in the proportion of the permeability of the parts more or less altered.

The preparation of the gelatinized glass plate offers no difficulty; the plate, well cleaned of course, is wetted with a 2 per cent. solution of silicate of potassa (soluble glass), and immediately rubbed dry with a rag; it is then ready to be coated with the gelatine solution which will spread quite easily. This solution is prepared thus—

| | |
|----------------|------------|
| Gelatine..... | 9 parts. |
| Glycerine..... | 1 part. |
| Water..... | 100 parts. |

Mix the water with the glycerine; let the gelatine soak in the mixture until it is well swelled; dissolve by heat, and filter through flannel.

The quantity of solution to be spread on the plate is not of great importance. The film should not be too thin, nor very thick; for a plate 5 x 7, about 4½ drams are sufficient, and 10 drams for a plate 8 x 10. The plates, when coated, are placed on a leveled support, and, if the temperature is not very high, the gelatine sets rapidly. The plates can then be placed on a rack, and, when dry, stored in a box until wanted for use.

As it is seen, the preparation of gelatinized plates is very simple; it can be done either by daylight or in the evening. Nevertheless, many amateurs will probably object to it. But most of them have bad gelatino-bromide of silver plates. If they have not been developed, it suffices to dissolve the silver bromide in a fresh, strong solution of hyposulphite of soda, if they have been exposed and the image developed; and, if the negative obtained is not good, the reduced silver can be entirely dissolved by Farmer's reducing bath. Now, all the plates, well washed and dried, can serve to obtain an image by the process of hydrotypy.

The Farmer reducer consists of—

| | |
|------------------------------|----------|
| Red prussiate of potash..... | 4 parts. |
| Hyposulphite of soda..... | 12 “ |
| Water | 100 “ |

This solution is quite energetic, and could not be employed for reducing the intensity of negatives or of diapositives without great risk of spoiling them. It does not keep.

For use, the gelatinized plates are sensitized in a 3 per cent. bath of ammonium bichromate by immersion during a period of about three minutes, and afterwards allowed to dry spontaneously in the darkroom. It may happen, but rarely, that the bichromate crystallizes on the surface of the film; in this case the excess should be sponged off with a soft rag or blotting paper.

When dry, the plate is exposed to direct sunlight, or, better, in the shade, under a negative to obtain a negative, and under a diapositive to obtain a positive impression. The exposure time naturally depends upon the intensity of the light and the transparency of the cliché; when the image is visible in all the parts, the exposure is sufficient.

After exposure, the plate is washed, to dissolve the bichromate, and then allowed to dry. This done, it is immersed in a colored solution where the parts, more or less soluble, swell and absorb the liquid in quantities proportionate to the luminous action during the exposure time, and it suffices then to wash out the excess of colored solution to finish the operation.

The substances employed for coloring the liquids are the following:

Blue.—Prussian blue, aniline blue.

Yellow.—Berberine, picric acid and the picrates.

Red.—Eosine, fuchsine, ammoniacal carmine.

By mixing these coloring substances, a series of different tints can be obtained.

It should be observed that the gelatinized plates, which have been treated by alum, do not generally give very good results.

A SHEET FORM OF MAGNESIUM FLASH LIGHT.

BY MR. C. B. READER.

[Extract from a paper read before the Liverpool Amateur Photographic Association, October, 1892.*]

THERE are difficulties attending the reduction to lantern size by means of artificial light which render the game hardly worth the candle, and still it is absolutely necessary frequently, even from quarter plate, to reduce in order to produce the best effects. At this time of the year that erratic and variable quantity “daylight” is unavailable in the majority of cases, and to become entirely independent of it with respect to reducing and enlarging we require a light which will illuminate a large area with perfect evenness, and still give sufficient intensity to bring the necessary exposure within a reasonably short time. While experimenting in this direction the simple fact that the portion evenly lit corresponded, more or less, with the size of the flame used, led us to conclude that when we could produce a sufficiently large flame our object would be attained. A great many ways in which this might be done have been carefully

* From Author's Copy.

considered and tested, and found wanting ; in the best cases the enormous heat evolved was against them.

But, notwithstanding, Mr. Potter and myself claim that by a simple modification we can induce an old friend to serve our purpose.

We claim to have constructed a means of illumination which is perfectly even over a practically unlimited area, is economical and easy of manufacture, and one which will give good and satisfactory results ; and though we claim this, we respectfully submit the idea as a crude one. To put the matter briefly this light is simply our old friend the magnesium flash light, but, in sheet form.

Equal quantities by weight of magnesium powder and chlorate of potash are placed between sheets of tissue paper and this fired while suspended parallel with the negative.

In practice the following difficulties have been met with : the carbonized portions of the paper have obstructed the light somewhat, the uneven sprinkling of the light-giving powder has been found detrimental to the best results and the smoke evolved has been a source of annoyance and discomfort.

These difficulties have been overcome, firstly, by using pyroxyline instead of ordinary paper ; secondly, by adopting a "pellet" system of spreading the powder ; and, thirdly, by enclosing the luminant in a smoke trap or box.

Demonstration (half-plate size). A piece of $\frac{1}{16}$ -inch zinc about 8 x 6 inches is perforated with holes $\frac{3}{16}$ inch in diameter, every half inch (actual number 117). This, laid on a sheet of the paper, has 20 grains of the mixture spread over it and swept into the perforations ; the zinc being removed, it leaves "pellets" containing about $\frac{1}{6}$ th of a grain each ; a slightly starched or pasted similar sheet placed on top completes the operation, drying under slight pressure being all that is required.

[From *Astronomy and Astro-Physics*.]

SOME RESULTS AND CONCLUSIONS DERIVED FROM A PHOTOGRAPHIC STUDY OF THE SUN.

GEORGE E. HALE.

IN view of the fact that the study of prominence, facula and Sun-spot spectra by photographic means has now been taken up by several investigators, it seems desirable to bring together the results of the work in this direction which has been in progress at the Kenwood Observatory since April, 1891. Some of these results have been published before or casually referred to in papers on other branches of solar work, but they cannot fail to be of greater value for comparison with the investigations of others if grouped in a single article. There also remain to be mentioned several disconnected matters to which attention has not yet been called.

The following are some of the results, with several conclusions to which I have been led ; further investigations may very possibly render necessary material modifications in the views here expressed.

CHROMOSPHERE AND PROMINENCES.

1. H and K are always present as the strongest lines in the chromosphere and prominence spectrum.
2. These lines extend to the highest parts of all prominences, but have not yet been traced to any greater distance from the limb, *i. e.*, into the corona.
3. K seems to be invariably stronger than H, and extends farther from the limb.
4. In cases of motion in the line of sight, the distorted forms of the H and K lines are similar.

5. Prominences have the same form in both lines. Where apparent differences exist they may probably be ascribed to the greater brightness of K. (This remark also applies to 4.)

6. Both H and K expand rapidly in width from the upper surface of the chromosphere to its base. Consequently photographs taken with the slit just tangent to the limb show these lines more than twice as broad as they appear in the higher region of prominences.

7. Both lines are often doubly reversed (narrow dark lines running down the center of the bright lines) in the chromosphere, and sometimes in the base of bright prominences.

8. H is always accompanied by a hydrogen line ($H\epsilon$), but this line is much fainter, and does not extend so high in prominences.

9. The entire series of ultra-violet hydrogen lines have been photographed in very bright prominences, but in faint prominences the lines more refrangible than α_1 or β_1 are usually absent from the photographs. They may, however, be present as very faint lines in all prominences, but remain invisible on the photographs on account of the brilliancy of the atmospheric spectrum.

10. The line α_1 is frequently accompanied by a line slightly more refrangible, which is probably not due to hydrogen. In a few cases α_1 has been single in certain parts of a prominence, and double in other parts.

11. The upper component of α_1 is sometimes doubly reversed in the chromosphere.

12. No prominence has yet been found which showed the H and K lines alone, *i. e.*, without some of the less refrangible hydrogen lines.

13. The forms of prominences as observed in C and in H and K seem to be the same, though they may be more extensive in the latter lines.

14. Prominences seem to have the same motion in the line of sight, whether observed in C or in H and K.*

15. The spectra of eruptive prominences frequently contain many metallic lines in the ultra-violet; notably the magnesium triplet at λ 383.†

16. Eruptive prominences sometimes exhibit a continuous spectrum in the ultra-violet.

17. Prominences frequently show evidences of spiral motion.

FACULÆ.

18. Both H and K are always reversed in faculæ.

19. These reversals are usually (if not invariably) double, a narrow dark line running down the center of the broader bright line. The appearance on the photograph is consequently as if there were two narrow bright lines separated by a narrow dark line, in the centers of the broad dark shades at H and K. In some instances I have noticed that one of these narrow bright lines was missing in certain portions of a facula, an unsymmetrical double reversal resulting.

20. Distortions in the doubly reversed H and K lines of the faculæ are rare. I have found but one or two instances of this kind, and in these cases the distortions took the form of expansions in the lines.

21. H is usually unaccompanied by the slightly less refrangible hydrogen line, referred to above as being always present in prominences. In a few cases, however, this line has been found extending across spots, and for some distance in the faculæ on either side.

22. Neither α_1 nor any other bright lines more refrangible than H and K have been found in faculæ or spots.

*In one case where the motion of the entire prominence was considerable, a large number of lines in the ultra-violet (all that were visible on the photograph) were equally displaced with H and K.

†See my article on "The Ultra-Violet Spectrum of the Solar Prominences" in this number of *Astronomy and Astro-Physics*.

23. Curved forms predominate in faculae, and suggest some relation with spiral forms in prominences.

SPOTS.

24. The bright H and K lines seem to invariably extend entirely across every Sun-spot. Both lines are doubly reversed in the faculae which probably completely surround every spot. In the umbra the reversals are narrower, and the dark central line is usually absent.

25. Small spots, especially when members of a group containing large spots, are frequently completely covered with faculae.

26. In the ultra-violet spectra of spots the dark lines of the solar spectrum do not seem to undergo selective widening, as in the less refrangible parts of the spectrum. Beyond the presence of the bright H and K lines, and the infrequent appearance of H ϵ , the spot spectrum seems to differ from the ordinary solar spectrum only by the increased general absorption.

27. Distortions of the bright H and K lines in spots are extremely rare.

CONCLUSIONS.

28. The exact agreement of H and K with the two strongest lines in the spectrum of the calcium spark leads me to attribute these prominence lines to calcium. While the properties of calcium in its terrestrial condition make it difficult to see how its vapor can form the most important constituent of the prominences, yet I do not see how we are to escape from this conclusion.

29. No other than a negative conclusion can as yet be offered in regard to the perplexing question of the so-called "white prominences." At the eclipse of August 29, 1866, a large prominence was photographed which was said by Professor W. H. Pickering to have no other lines in its spectrum than H and K, and a faint trace of an ultra-violet line, in addition to a bright continuous spectrum. He goes on to add: * "It was therefore quite invisible, both before and after totality, by the usual spectroscopic method, as was in fact noted at the time by Professor Tacchini." The character of the photograph, at least so far as can be judged from the reproduction accompanying the report, was hardly such as to warrant any very positive statement as to the absence of the hydrogen lines, particularly as they might have been partly obscured by the bright continuous spectrum. The prominence might also have been eruptive in nature, not lasting longer than the duration of totality, and thus may not have existed when Professor Tacchini made his observations before and after the eclipse. However, this may be, for this is only one of a number of cases in which "white prominences" have been recorded, I have as yet found no prominences which exhibited H and K without the hydrogen lines. This point has not been made the subject of special investigation, however, and it may be that some cases of the kind may ultimately be brought to light.

30. The fact that small spots are sometimes completely covered with faculous matter (or possibly with prominences) may assist in explaining the anomalous heat radiations recently measured in certain spots by Professor Frost.* I hope to take up this point more in detail elsewhere.

31. Photographic methods have abundantly substantiated the conclusions long ago drawn from visual observations in regard to the nature of faculae. In a great many photographs taken with the spectro-heliograph, faculae are shown projecting above the Sun's limb. And the intimate relationship between faculae and eruptive prominences is not less evident, especially in composite photographs showing faculae and prominences on the same plate. When we consider that eruptive prominences probably rise from faculae, it is not at all surprising that such prominences sometimes show a continuous spectrum in addition to their bright lines. For a violent eruption

* *Annals of Harvard College Observatory*, Vol. XVIII, No. 5, p. 109.

* *Astronomy and Astro-Physics*, October, 1892.

would naturally carry up with the prominence some "dust-like"* matter from the facula, which would give a continuous spectrum.

32. The reversals of the H and K lines over spots seem to be readily explainable. As has been stated above, the reversals are double in the penumbra, and also for a considerable distance on either side of the spot, but usually single in the umbra. As spots seem to be always surrounded by faculae, which frequently encroach upon the penumbra, the double reversals occur in these just as they do in faculae not in the vicinity of spots. The single reversals in the umbra, however, probably take their rise in the chromosphere, which presumably overlies the cooler regions of the spot.

KENWOOD OBSERVATORY, University of Chicago,

October 18, 1892.

[From *The British Journal of Photography*.]

CARBON PRINTING.

As a feather cast upon the waters shows the direction of the tide, so the annual exhibition of the Photographic Society of Great Britain may be taken as an indication of the advancement or otherwise of different photographic processes. Allusion was made last week to the fact that the carbon process is better represented in Pall Mall this year than it has hitherto been. Therefore, it may well be assumed, with other knowledge we are in possession of, that the process is now being more extensively worked than at any previous period, not only for large sizes by the profession, but also among amateurs for small work. It is not at all surprising that this should be the case when it is considered that, apart from the undoubted permanence of the prints, a greater variety of effects—now so much in demand—are to be obtained by it than by any other process, or, indeed, by all the other processes combined.

There is not a process that will yield effects that cannot be got equally as well by the carbon method, while by it many others can be secured that would otherwise be impossible. When all these advantages are enumerated, some of our younger readers may—and not unnaturally—inquire why a process combining so many qualifications was not more generally taken up by photographers in the past? For their information on this point a few words may not be out of place, as it will explain the different conditions of working, then and now.

When the carbon process was first introduced, now some thirty years ago, it was the subject of a patent, and heavy charges were made for licenses, while, at the same time, the process was troublesome to work. For example, the exposed tissue had to be cemented to paper with india-rubber for development, and afterwards transferred to its permanent support by treatment with benzol. At that time the only real advantage that could be claimed for the process over those in general use was permanence, while the quality of the results, for small work at least, was inferior to what could be obtained in silver. Simplifications followed, india-rubber was dispensed with, the single transfer method was introduced, and was generally adopted for large sizes.

Some sixteen or seventeen years ago considerable impetus was given to the process by an ingenious Frenchman, M. Lambert, who demonstrated that, by his modified method of working, small prints could be produced which were quite as good as, if not really better than, those on albumen paper. This modification was vigorously exploited by him, and at the time some were sanguine enough to predict that the knell of silver printing was sounded. Progress was, however, considerably impeded again by patent rights, and the way in which they were dispensed. Exclusive licenses were granted for certain towns and districts, the purchasers of which could not or would not take the trouble to learn how to master a, to them, new process, while others were precluded from working it by these exclusive rights. In some instances, licenses were

* See Fényi, *Astronomy and Astro-Physics*, May, 1892, p. 431.

taken without any intention of adopting the system, but simply to prevent more enterprising rivals from taking it up. With regard to amateurs at this time, licenses were also requisite, but they were eventually granted at a merely nominal fee.

All patents in connection with carbon printing have long since expired, so that now the process is open to all. It is only within the past two or three years that the simplicity of the carbon process has been fully realized. Indeed, by some, it is even now considered to be a troublesome one. This is clearly proved by the remarks often heard during the several demonstrations that have been given before some of the newer societies, which are chiefly composed of amateurs and young beginners. Most persons seem surprised, when they see the method worked for the first time, at its exceeding simplicity.

At the present time, amateurs and workers on a small scale are relieved of one of what used to be the most troublesome and uncertain of the operations, namely, the sensitizing and drying of the tissue. Some little time ago the Autotype Company—and the example set by them has been followed by other firms—commenced to supply the tissue in small quantities, ready sensitized, cut to the standard sizes, and in the proper condition for use. This has conducted more than anything else to popularize carbon printing among small workers. Sensitizing tissue is a somewhat messy operation, and those familiar with the subject know quite well that the drying of it, so as to obtain it uniformly in its best working condition, is a somewhat ticklish operation without suitable arrangements. It used to be said, and not without reason, that more skill was required in sensitizing and drying of the tissue than in any other portion of the work. It will now be seen why the practice of carbon printing has of late become so much more popular, and promises to become still more so among amateurs and others aiming at variety of effects.

By the carbon process pictures can be obtained in every conceivable color, with any surface—from the highest enamel surface to that of the roughest drawing papers—and, indeed, on almost any material. If the single transfer system be adopted, it becomes one of the most, if not the most, simple printing process to work. The exposed tissue is merely squeegeed on to the paper, then treated with warm water until the image is sufficiently developed. A short immersion in a solution of alum and a final rinse in water complete the work, while an absolutely permanent picture is secured. Where is a simpler process than this? True, for single transfer, a reversed, as regards left and right, negative is necessary; but negatives on celluloid fulfill this condition, if they be printed through the celluloid. With the thicker films there will be, practically, no loss of sharpness if the exposure be made to a tolerably direct light, and with the thinner ones any light will suffice to secure sharp impressions. Objections to carbon printing have been raised by some who have in times past decried the process, because the image cannot be seen while printing; therefore, the correct exposure cannot be judged. In doing so, however, they quite overlooked the fact that the same remark would apply equally well to the taking of negatives, the use of bromide papers, and other photographic operations.

In the carbon process the latitude in exposure is so great that an error of 50 to 100 per cent. either way does not really mean the loss of the print, it is merely a question of time and temperature in the development. Furthermore, in this process the print, when wrongly exposed and made right in the development, is of the same color and tone as that of those which have been correctly timed, a condition that does not obtain in any of the silver processes.

“WELL, well,” sighed the wife, as she finished exploring her sleeping husband’s pockets without having discovered a cent, “this is like one of those railroad journeys, ‘going through without change.’”—*Boston Gazette*.

INDUSTRIAL PHOTOGRAPHY.

DECORATIONS OF WINDOWS.

FASHION, in reviving a taste for stained glasses in private houses, has suggested to artists and glassmakers the employment of photographic processes for the ornamentation of windows.

We lately visited one of the large establishments of Paris, the proprietors of which, both engineers and artists, employ, for the beautiful stained-glass windows they make, all the processes that long practice has suggested as being suitable for their industry.

We will indicate the photographic processes which Messrs. Léimal and Raquet prefer as being stable and resisting ordinary cleaning. Before describing these processes, it is necessary, we think, to call to mind a few elementary data.

There are three kinds of glass plates employed for windows; those colored in the mass (pot glass), those with two tints (flushed glass), and, lastly, the white glass. The first one serves, so to speak, for the mosaic coloration of the subject; the second, which is made by the blowing process, in spreading on the white glass a thin coating of colored glass, serves to form, by means of etching with acid, or, as formerly, by the grindstone, the ornaments on the cloths, the laces, the borders, sometimes even the lights on certain parts of the dresses. All the glasses prepared for windows are made with two coatings, not only for the use we have indicated, but also to obtain that transparency, that richness of tone, which the pot glass never presents.

As to the white glass, it serves as a support for the painting made by artists, or for the photographic image produced on its surface.

The glass is stained by means of metallic oxides or their salts. The salts of copper when vitrified give a red, that employed for the windows of our darkroom; the salts of silver produce yellow; a rose is obtained with the salts of gold, and blue with the salts of platinum. These four colors are only made on double glasses.

If the three last tints are united, and if one sees them by transparency, a more or less deep gray, according to the value of each tint, is obtained. It is on this observation that Messrs. Maréchal and Tessié du Motay based, in 1865, the photographic process following:

A silver positive image, obtained by the collodion process, is fixed, then immersed for a certain period into a solution of chloride of gold; in this bath a part of the metallic silver, which constitutes the image, is replaced by gold; after washing, the proof is transferred to a solution of chloride, or of nitrate of platinum, where another part of the silver is replaced by platinum.

The collodion pellicle holds, therefore, an image which, in consequence of the two substitutions, is constituted with silver, gold and platinum. Hence, if the glass plate, upon which the image is made, is placed in a muffle, and if the temperature be raised to a pretty high degree (500 to 600 degrees C.) to form a silicate of silver, gold and platinum, a gray coloration will be obtained, just as that produced by the superposition of the three glasses separately colored by the three metallic salts.

A portrait of a woman, exhibited by us to the French Society, is as fine a specimen as can be desired; it comes from the establishment of Messrs. Léimal & Raquet.

The second process is based on the decomposition of the salts of copper oxide by the silver salts.

If one place in perfect contact a negative image on collodion upon one of these red glasses used for the lantern of our darkroom, which is a glazing formed by copper oxide (Cu_2O), it suffices, after desiccation, to cover it with a slight coating of pipe clay, then to place the glass in muffle furnace, heated to 500 degrees C., to obtain the

decomposition of the copper salt; the image is negative by transparency, but positive by reflection, and the reverse by using a positive image.

The third photographic process utilized by Messrs. Léal and Raquet is specially employed for the reproduction of designs and paintings, and has long been known as the powder process.

In this case a positive on a glass plate from the subject to be reproduced serves as a cliché. A white glass plate is then coated with the following mixture:

| | | |
|---------------------------|----------------|------------|
| Water | 100 c.c. = | 27 drams. |
| Syrup of sugar | 2 " = | 32 minims. |
| Honey | 0.5 gram = | 7½ grains. |
| Glucose | 8 grams = | 123 " |
| Gum arabic | 5 " = | 77 " |
| Potassium bichromate..... | 2 to 3 grams = | 31 to 46 " |

The coating is dried by means of a spirit lamp in the darkroom; then placed, while still warm, in a printing frame, upon the positive cliché.

The exposure to light varies according to the luminous intensity and the opacity of the cliché, from five to eight minutes.

Under the influence of light, the potassium bichromate is reduced and modifies the coating, which loses the adhesive properties, and this proportionately to the time of exposure and the intensity of the light, the parts not modified remaining hygroscopic. It then suffices to pass over the surface of the coating, after insolation, a soft badger brush charged with an enamel powder, to obtain a positive reproduction, which will be fixed by firing.

If on this white and black image one applies colored enamels, one obtains a vitrified picture, whose shadows are modeled by the photographic impression.

Lastly, we have seen in the same establishment a fine diapositive, made by Mr. Nadar, on a gelatino-bromide plate backed by a ground glass, and set in a stained window. This reminded us that this artist has before shown, in his exhibit of 1889, photographic ornamentation applied to windows, and it is interesting to point out that this innovation has been followed commercially.—*Photo Club de Paris*.

[From *Photography*.]

FIXING AND WASHING.

BY ANDREW PRINGLE.

IT is always a very vexatious matter to find some negative or print originally good, and possibly valuable, hopelessly deteriorated after a lapse of time through the ignorance or carelessness of the owner. Now, we are aware from personal experience in a few cases, but happily from the experience of others in a great many more, that it is by no means an unknown thing to lose a good negative or print, from neglect of precautions supposed to be known to all photographers of any standing or skill. In all probability all that we are about to say here has been already said in other places by ourselves as well as by others; but, none the less, a few words of warning and advice may not be thrown away on those who have not studied the question of washing, or who, having perchance studied it, have on some unfortunate occasions neglected to put the fruits of their study to use. It may fairly be said that if a negative is put away insufficiently washed for any length of time, and the mischief only discovered when the effects of the oversight are visible, that negative is doomed to destruction irretrievable: and the same holds good with a print of whatever kind, so far as occurs to us at the moment. And if want of washing is fatal in this respect, improper or insufficient fixation is no less certain to lead to loss. Indeed, we believe that more negatives and prints are lost through errors of fixation than through insufficient washing afterwards. In our own experience, certainly, this has been the case; we have far

more often found the brownish stain, not removable by any process we know, on old negatives, than we have found such markings of crystalline nature as are usually and properly attributed to insufficient washing.

First, then, to deal with what may be called the safeguards of fixation by means of hyposulphate of soda. In the first place the hypo must be in solution strong enough. We know that it is not at all an uncommon habit to keep hypo in "saturated" solution to be more or less diluted before use. This is not, perhaps, a very dangerous method of work, provided we use our stock solution with discretion. It must be remembered that when first hypo is dissolved in water the temperature of the water is lowered to a considerable extent, so that a fresh solution of the salt is not so strong, however well it may be stirred, as a solution that has been allowed to stand for a time and gently stirred once or twice. Also it is found that if a solution of hypo is allowed to stand at rest for a time, the stronger part of the solution tends to sink to the bottom of the vessel, and if the solution is poured out of the vessel without agitation previously, the odds are that the solution so poured out is far below strength. The stock solution then should be well stirred before it is poured into the fixing dish or bath. The same hint may apply to the not uncommon use of a vertical bath for fixing plates in. If the hypo is not present in sufficient proportion to dissolve the silver hyposulphite first formed in the process of fixation, an insoluble salt is formed in the film, which will eventually ruin it. And it is not enough to leave a plate or print in the hypo bath till all the silver bromide has disappeared from sight; it may safely be stated as a guide that when the bromide seems to have been dissolved, the plate is just about half fixed. On the other hand we know plates that frill, or become blistered under too strong hypo solution, and it would appear that some plates refuse to fix in hypo solution beyond a certain strength.

Next, the state of the solution is of great moment, we refer to its alkalinity or acidity. Leaving out of question specially constituted acid fixing solutions, on which we confess to look somewhat askance, it may be said that acid solutions of hypo have ruined more well-developed negatives than all other causes put together. To see the effect of acid on hypo in solution the reader need only drop a little of a mineral acid into such a solution in, say, a test-tube. It is to be noted that commercial hypo kept either in the crystal or in solution becomes acid spontaneously. We therefore recommend that the fixing bath have added to it a dose of any ordinary alkali, as ammonia or a carbonate sufficient to give a plain reaction to litmus. Our own habit is to add ammonia till we can detect the smell of the alkali.

Regarding fixation in hypo, we would earnestly urge the reader to see that the solution is strong enough, not under 1 part of crystal by weight to 5 of water, and specially that the solution be not acid. Lastly, it is essential that plates, and, still more, prints on paper, are allowed to remain long enough in the fixing solution. Sometimes with paper we are forced to reduce the strength of the solution, all the more in such circumstances must we allow plenty of time.

Now for the washing. Frequently we hear of certain substances being recommended as eliminators of hypo from prints or plates. These substances are highly to be recommended for use after the hypo has been thoroughly eliminated by washing. The trouble with hypo is not its insolubility—for, as we all know, it is very soluble in water—but the fact of its being so difficult to reach in paper or in gelatine. If we can only get the water at it the deed is done. A gelatine film on paper is much easier to free from hypo than a similar film on glass or celluloid, simply because with the paper the water reaches the hypo by both back and front doors at once.

A good rose tap will wash a plate or print in five minutes better than any machine we have ever seen or tested can do in as many hours. If a paper print is laid under a rose tap "fore and aft" alternately for a comparatively short time, and particularly if a squeegee is used on the back, the print lying on a sheet of glass or similar material, it will be thoroughly washed in a few minutes. A plate is also well

washed in a comparatively short time under a rose, but here we must allow more time, because we reach the front only, and because we cannot use the squeegee to drive the hypo mechanically out of the film. But if we have many plates or prints to wash, the time taken by individual washing would be too great, and so we have to fall back on a machine.

There are many machines on the market for washing plates and prints. Some of these are extremely interesting as studies of hydraulic and mechanical appliances; but few of these are really efficient for washing plates or prints. We may state what appear to us to be the leading requisite points for a machine for this purpose. If any reader knows of a machine answering our description, or nearly so, he may not do amiss to obtain it.

The water must be constantly changing or frequently changed. The water must be led away from the bottom of the apparatus, and not be merely an overflow. The water must be constantly moving in all directions, or, at least, in various directions, all the time; and if prints are being washed they must be kept on the move, and must not be allowed to stick together under any circumstances. It is a good plan to arrange that for a short time the prints may drip, say, by means of a false bottom; but the danger is that after this drip they may not be disengaged from each other, and may stick together during later stages.

The best washing machine we have seen for plates would not do for prints, and the best for prints would not answer for plates. Several machines on the market act well for plates, but those for prints are not so happy, we think. The best washer for prints we know is made out of a washing tub; it has a perforated false bottom screwed down to the bottom of the tub; a large bore siphon starts from near the bottom of the tub and goes outside the tub to near the top, where it bends down and ends below the level of the bottom of the tub. The siphon is much bigger in bore than the inlet. The water runs into the tub through a "compo" pipe so perforated that a strong roundabout current is produced in the tub. The course of events is as follows: The prints are put in when the tub is about half full; when the water reaches the top level of the siphon, the latter starts work and empties the tub from the bottom in a short time; the prints drip a short time on the false bottom, and are raised and floated separate by the water as it again rises on the finish of the siphon-action. This, of course, like history, repeats itself—"A poor thing, but our own." The same principle has long been carried out in porcelain, but the tub being larger is available for many more and much larger prints.

[From *The British Journal of Photography*.—*Lantern Supplement*.]

A NOTE ON COLORING LANTERN SLIDES.

BY E. DUNMORE.

THE long winter evenings offer many opportunities for making lantern slides, when there is little else to photographically occupy the time, unless it may be printing and enlarging by artificial light in its various phases. But, to the greater number of amateurs, large work does not offer the attractions that work which can be performed in a limited space generally does. The ruling household powers, more often than not, look with anything but favor on the so-called "slopping about and making messes" entailed by working either large plates or paper. Consequently lantern work (the "mess" being reduced to a minimum) is better tolerated.

There is, however, somewhat of monotony in plain slides, that may be occasionally varied with advantage. I allude to coloring. *Imprimis*, a badly colored slide is, perhaps, one of the most offensive kinds of pictures that can be made; the large scale on which it is shown emphasizes its shortcomings, and it has, without doubt, a commonplace, vulgar effect. Most persons unacquainted with the process of slide painting imagine that to do so well requires very considerable artistic ability and mastery over the material,

even when the ordinary transparent colors are used. A certain amount of skill is required that may be too much for those not accustomed to water-color painting. In the alternative method I now propose, such a very small modicum of painting ability is required that most of those who can take a photograph would be, with a little practice, equal to it, and obtain results that, considering the little trouble required, are decidedly satisfactory.

Procure an assortment of Judson's liquid dyes of suitable tints, a small quantity of spirits of wine, not methylated, and some camel-hair pencils, small paper stumps, and a piece of glass to do duty as a desk. I may here say it is of no use trying to mix the dyes like other color in order to make certain tints, for one color seems to destroy the other instead of forming a tint midway between the two. The dyes must therefore be used alone, diluted more or less with spirits of wine, and one tint allowed to dry before another is applied. The principal difficulty is in avoiding the thickening of color at the edges of the stroke, but with a little practice this is easily overcome. Begin with the most delicate tints first, in a landscape the sky and water, finishing with the more pronounced colors. A drop or two of a suitably colored dye being put into a small saucer, add sufficient spirit to dilute it to the proper tint, having at hand a little plain spirit into which the brush can be dipped as occasion may require; owing to the volatile nature of the medium, promptitude must be used to avoid waste, or the different tints may be kept diluted in small bottles.

Supposing we desire to tint a moonlight scene with good clouds, and bright reflections on the water; a cottage with the windows illuminated; or lanterns hanging to the rigging of ships. Firstly: take a small stump, dip it into a solution of wax in benzole, or suitable greasy matter, going over all parts carefully that have to remain colorless. The windows and lanterns having been tinted yellow or red, let these be waxed also, the slide then may be bodily immersed in weak greenish blue dye; blot off the edges and dry. This will be probably all that is required to complete the picture. With a daylight view, tint the sky pale blue, softening off the color towards the horizon with plain spirit; then carefully go over the landscape with suitable tints, always putting on the lightest and most delicate first, and drying before the application of the darker greens, etc. It is best to use but little color, slightly tinted pictures having the best effect on the screen. Simple as this process is, excellent results may be obtained with little practice. Some colors are apt to dry duller than others. When this is the case a little gelatine solution poured over will restore the brilliancy, care being taken to avoid dust in drying.



ANOTHER ANSWER TO "A TOUCHING APPEAL."

WE would acknowledge the receipt of \$1 from Mr. W. G. C. Kimball, of Concord, N. H., for the Snelling Fund. Surely it is not to be said that Charity has no place in the hearts of the photographic profession! Put yourselves in Mr. Snelling's place—alone, old, and nearly blind. Must another burden still be added—that of being *friendless*? It lies with each one of us to answer this question.—EDITORS.



OUR ILLUSTRATION.

WE give to our readers in this issue a production from the studio of George G. Rockwood, New York, entitled "A Juvenile New Yorker." Surely, if this is a fair specimen, our city need have no fear of the coming generation. There is a speaking quality to this picture, something lifelike and full of action, so characteristic of Mr. Rockwood's treatment of child subjects, and hopelessly unattainable where a prolonged pose and exposure are required.

Half the charm of child life lies in its motion and animation, and the expression of both of these qualities has been happily caught and reproduced by a master hand. The pose is perfect, the lighting admirable, and it seems as if we could hear the merry laugh and quick reply that accompanied the snap of the shutter, telling that childhood's evanescent laughter had been made into a permanent and lasting record.

ANTHONY'S Photographic Bulletin.

EDITED BY

Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by **ARTHUR H. ELLIOTT, Ph.D., F.O.S.,**
and a corps of practical assistants.

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E. & H. T. ANTHONY & CO., Publishers.

CHICAGO LANTERN-SLIDE CLUB.

THE opening meeting of the season 1892-93 was made the occasion of a reunion after the holiday vacations, and Rev. Dr. David Breed, of the Church of the Covenant, entertained a large audience of members and their friends by an illustrated trip through the Rocky Mountain region about Pike's Peak.

The lantern slides were nearly all colored true to Nature, having been finished by the doctor while upon the trip, and the delicate work was highly appreciated by all present. Our interchange box this season goes forward representing the work of fifteen different members, and we believe will prove a treat to all members of the International Interchange. The set starts with some beautiful slides by Mr. Arnold, of the World's Fair; then several views from Pike's Peak from Rev. Dr. Breed's negatives, followed by Mr. Burnham's work, always admired. Those who remember his beautiful South American views of last season will enjoy comparing his surf studies from the South Park and World's Fair lake frontage. Some of these have the finest cloud effect ever shown on any screen.

Mrs. Bartlette comes to the front with several child studies, and we leave the criticism of these to some of your Eastern readers.

Mr. Robert Berger has contributed several views from the Rhine borders in Germany. Castles and vineyards, and one Genre study of boy and dog, which, for an instantaneous shot, is simply superb.

The Secretary has contributed some few Norway views, and several from the Austrian Tyrol.

With the present season's membership in the Interchange all lovers of stereoptican pictures should find a feast of good views, illustrating nearly all parts of both continents.

We hope to read in the BULLETIN from time to time criticisms of the different sets as they are shown before the New York Society of Amateur Photographers.

W. A. MORSE, *Secretary.*

TORONTO CAMERA CLUB.

At the annual general meeting of The Toronto Camera Club held recently, the following officers were elected for the season of 1892-93: President, Mr. E. Havelock Walsh; 1st Vice-President, Mr. A. W. Croil; 2d Vice-President, Mr. W. H. Moss; Secretary, Mr. Ernest M. Lake; Treasurer, Mr. R. G. Muntz; Committee, Mr. Hugh Neilson, Dr. N. A. Powell, Professor W. H. Ellis, M.D., Mr. J. G. Ramsey, Mr. George H. Gooderham and Mr. G. Townsend. Secretary's address, 17 Jordan street. It has been decided to have the Club incorporated.

The Club is in a very flourishing condition and has an active membership of 110 which is constantly increasing. The club now occupies splendidly appointed rooms at the corner of Yonge and Gerrard streets, containing a studio with a fine north light, reading-room, two darkrooms, printing room and enlarging apparatus fitted with 100 candle-power electric light and 10-inch condensers. The studio contains a fine portrait camera for the use of the members, fitted with a Darlot lens and a pneumatic shutter, together with appropriate backgrounds, reflectors, etc.

On the first Monday in each month from October to April, a lantern exhibition is given and the rooms are thrown open to members and their friends. On the other Monday nights practical demonstrations are given by some of the experienced members.

The Second Annual Exhibition will be held on the 12th, 13th and 14th of January, 1893, and the prize lists are now in course of preparation. At the last lantern exhibition a re-

markable slide of a flash of forked lightning was shown by Mr. H. English.

ERNEST M. LAKE, *Secretary.*

REMOVING GELATINE FILMS FROM GLASS.

A METHOD devised by Herr Liesegang for this purpose is as follows: Plunge the glass which carries the film into water rendered slightly acid by the addition of sulphuric, hydrochloric or citric acid; remove from this and immerse, without washing, into a 25 per cent. solution of bicarbonate of soda. The gelatine is puffed up by the formation of carbonic acid gas and may now be readily removed from the glass.

The enlargement of the film produced by this process can be remedied by a subsequent bath of absolute alcohol, and allowing it to dry perfectly flat, after which it can be attached to any desired support.

This process can be applied to either negatives or positives, and presents certain advantages over the hydrofluoric acid method.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. Correspondents will please remember this. No attention will be paid to anonymous communications.

We have received the following from Mr. Newton W. Emmens and publish it for W. B.'s benefit, meantime thanking our correspondent for his courtesy:

I noticed in the "What Our Friends Would Like to Know" column of your issue of November 12th that W. B. asks what process is used in putting a picture on the inside of a watch case. Thinking that my method may be of some assistance to him and others in the same position, I herewith give the following instructions: 1. Make the negative on a transparent film in the ordinary way, as a glass negative will give a reversed image when finished. 2. Lay a piece of clean glass in the printing frame and place the film negative on it with the film side down. 3. Take a piece of transferotype paper about the size of the desired picture and lay it on the negative. Then expose to lamplight for from five to twenty-five seconds, according to the density of the negative. 4. Develop with either ferrous oxalate or eiko. cum hydro. Then fix

and wash in the ordinary way, taking care that there is no alum in any of the solutions. This will give a reversed positive. The print should be considerably darker than an ordinary bromide print, as, when it is transferred to the watch case, the shining metal underneath makes it look very much lighter. 5. Take the washed print, trim to the desired size and shape (which can be done with a sharp pair of scissors while still wet), and lay face down, in its place, on the watch case. Place a piece of clean blotting paper on the print and press it with the finger into good contact with the watch case, taking care that the blotting paper does not slip and tear the print. Then put a weight on the picture and set aside to dry. The watch case must be perfectly clean and free from oil and grease, or the print will not adhere. 6. When the print is dry, pour hot water (almost boiling) on it till the paper begins to blister. Then, with the point of a pin, lift one corner of the paper, which can be easily pulled off, leaving the film on the watch case. Rub the film with a tuft of cotton wool and warm water till it is perfectly clean, and set aside to dry. 7. Take the picture, when dry, and varnish with some good negative varnish and keep free from dust till it is perfectly hard. The picture is then finished.

Q.—J. W. writes: In the BULLETIN of November 12th, in the department, "What Our Friends Would Like to Know," you refer W. H. W. to editorial notes for a simple and reliable method for ascertaining the speed of any shutter. I have carefully read the editorial note referred to, read it backwards and forwards, but do not understand the simple method. Is the cord with the silvered bulb attached to the shutter, and what is the position of the wire with reference to the camera and the unexposed plates? Also, would it be any better if the wire were pulled sidewise and the pendulum employed as above? It all does not seem to be quite clear. Possibly there should have been some mention of photographing the bulb while it was swinging past the wire with the velocity of 4 feet per second?

A.—We confess we are unable to perceive the obscurity complained of by our correspondent, but for his benefit will give the details of the method, which, for lack of space, were purposely omitted. The cord, with the silvered bulb attached, is fastened to any convenient support, say, the wall, so that it will swing at right angles to the camera. The camera is so placed that when the bulb is at the lowest point of its swing it will be in focus

on the ground glass. Suppose the lower end of the bulb to be provided with a bright sharp point which swings in front of a scale, divided in inches, pasted on the wall. Pull back the bulb so that the string assumes a horizontal position, let it go, and snap the shutter when it passes the field of the lens. This will be at its lowest point, when it will be traveling with a velocity of 4 feet per second. Suppose the portion of the scale covered over by the blurred image of the bright point to be one-half an inch. Obviously, then, the pendulum travelled that distance during the exposure, and as its velocity was 4 feet or 48 inches per second, the duration of the exposure must have been $\frac{1}{96}$ th of a second.

Q.—C. W. writes: Please tell me through the BULLETIN how to work over my gold waste?

A.—See article entitled "Photographic Residues," by J. Pike, on page 687 of the BULLETIN, issue of November 26th. We think this will more fully answer your question than anything which the limits of this department would permit us to put in.

Q.—J. C. F. writes: Will you please tell me through the columns of "What Our Friends Would Like to Know," in what class Photographs are entered at Post Office, 2d or 3d, and what is the developer for Argentic Dry Plates made by the Phenix Plate Co., so that I can mix and keep it fresh?

A.—Photographs are entered in the Post Office as second-class mail matter. We would advise you to write directly to the Phenix Dry Plate Co., Worcester, Mass., who will probably give you the desired information.

Q.—W. C. T. writes: Will you kindly give us the address of Mr. Hume, Secretary of the

"Photographers' Association of Ohio"? We have a letter from him which does not give an address.

A.—We think that a letter addressed to him as the "Secretary of the Photographers' Association of Ohio, Columbus, Ohio," would reach its destination.

Views Caught with the Drop Shutter.

A FIRE which broke out on the morning of November 13th last, in Sarina, Ontario, Canada, destroyed THOMAS' Photographic Studio, together with several other stores. The entire loss was \$5,000, partly covered by insurance.

THE portrait swindle still flourishes and one of the latest developments is to secure, if possible, the only existing photograph of some dead relative and reproduce it in an especially wretched manner. If the customer grows indignant and refuses to pay, the manager of the concern refuses to deliver the original photograph and the victim will then usually pay his bill rather than sue for the photograph which is legally his.

WE have recently received an illustrated catalogue from the GENEVA OPTICAL COMPANY of Chicago, which is very handsomely gotten up. Mr. W. H. Walmsley, formerly of Philadelphia, is acting as manager of the Optical and Photographic Departments, and it goes without saying that the position is ably and acceptably filled. We wish him his usual success in his new sphere of usefulness.

TABLE OF CONTENTS.

| | PAGE | | PAGE |
|--|------|---|------|
| A NOTE ON COLORING LANTERN SLIDES, by E. Dunmore..... | 732 | LETTER FROM GERMANY, by Dr. H. W. Vogel..... | 711 |
| ANOTHER ANSWER TO "A TOUCHING APPEAL"..... | 733 | OUR ILLUSTRATION..... | 733 |
| A SHEET FORM OF MAGNESIUM FLASH LIGHT, by C. B. Reader..... | 723 | POLYCHROME PROJECTIONS BY MEANS OF NON-COLORED PHOTOGRAPHS (con- tinued), by Léon Vidal..... | 717 |
| CARBON PRINTING..... | 727 | REMOVING GELATINE FILMS FROM GLASS..... | 735 |
| CHICAGO LANTERN-SLIDE CLUB..... | 734 | SOME RESULTS AND CONCLUSIONS DERIVED FROM A PHOTOGRAPHIC STUDY OF THE SUN, by George E. Hale..... | 734 |
| COLOR EFFECT IN THE PICTURE AND PHOTOGRAPHY (continued), by F. Stolze..... | 719 | TORONTO CAMERA CLUB..... | 734 |
| EDITORIAL NOTES..... | 707 | VIEWS CAUGHT WITH THE DROP SHUT- TER..... | 736 |
| ENGLISH NOTES, by Talbot Archer..... | 714 | WHAT OUR FRIENDS WOULD LIKE TO KNOW..... | 735 |
| HYDROTYPE, by P. C. Duchochois..... | 722 | WINTER PHOTOGRAPHY..... | 705 |
| INDUSTRIAL PHOTOGRAPHY..... | 729 | | |



A GOOD HAND

ANTHONY'S

Photographic Bulletin.

EDITORS :

PROF. CHARLES F. CHANDLER, PH.D., LL.D.

PROF. ARTHUR H. ELLIOTT, PH.D., F.C.S.

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VALEDICTORY.

AFTER this issue of the BULLETIN the work of the present managing editor falls into new hands. For a period of eight years I have had the honor and pleasure of preparing for the press contributions from the pens of the most illustrious contributors to the literature of photography. The time has now come when I must resign this pleasure to another, because Nature has warned me that I have been taxing my eyes too severely and must give these precious organs a chance to recover from the effects of overwork. Over a year ago I had a similar warning, but the pleasure of being associated with such a glorious band of photographic workers kept me at my desk, and I hoped to be able to continue the work with the aid of a good lieutenant. For this purpose I called to my assistance Mr. F. P. Smith, a graduate of Columbia College, a good photographer and a practical chemist. But after struggling along for many months, it soon became evident that evening work must cease ; and since the greater part of my work upon the BULLETIN was done under the lamp, and my days are filled with college duties, the end was forced upon me.

I regret exceedingly to have to give up the work to another. Having carried this on so long it has become a part of my life, and the intercourse with the large circle of friends I have made through the columns of the BULLETIN will live on with me and be a never-ending source of pleasant memories in the future. To these good friends I must now say adieu, as far as our union in the BULLETIN is concerned. But I shall still retain the privilege of having been with them in photography and the honor of the association. The errors I have committed in the past I hope they will pardon, and the successes we have enjoyed together have been more the result of their devotion to the journal than any merits of the managing editor.

I now leave the work to other hands ; not to an untried guide, but to one who has been at my right hand during the past twelve months. Most of the

hard work of the journal has been done by Mr. Smith for many months, and he will now continue to pilot the ship alone. The course of the vessel is well marked on the chart of photographic literature, she is flying no uncertain colors, her crew is of the best that photography can furnish, and her record is beyond question. It only remains for me to wish her Godspeed, and hope that I may in future years be proud of having been one of those who stood by the helm.

ARTHUR H. ELLIOTT.

LAST YEAR'S RECORD.—THE "BULLETIN'S" PLANS FOR 1893.

At the close of last year we made certain promises for the BULLETIN in 1892. While self-laudation is something that we always decry, it seems to us to be only just to point out to our readers the way in which those promises have been carried out. There is a certain responsibility which rests upon our shoulders, accompanied at the same time by a proud consciousness that our efforts have been appreciated by our readers, a fact clearly demonstrated by the increasing circulation and popularity of our journal. We have termed it the BULLETIN—we have endeavored to carry out all, and more, than the name implies; a record of passing events, improvements and inventions in the photographic world, a just champion of the fraternity, and a paper which, once read, would become indispensable to every honest thinking worker in our glorious art, be he amateur or professional.

To this end we have secured as contributors many of the most noted writers in this and foreign countries, who have from time to time presented in these pages the various occurrences of note and general interest in the line of photographic events. Nearly one hundred pages have been devoted to such communications from the pens of Dr. Vogel, Léon Vidal and Talbot Archer, who have ably sustained the German, French and English claims to prominence. In addition to this our editors have faithfully transcribed and noted that which they have deemed worthy in American progress, and it goes without saying that these records have been able, just and complete.

Original articles have filled upwards of one hundred and twenty-five pages with hints, processes and suggestions in the lines of chemical, physical and mechanical research, in which the rules of art and composition in photography have received the consideration which is justly due them.

The names of Dr. J. Gaedicke, Professor Alex. Lainer, Captain Eugene Himly and Dr. F. Stolze, of Germany; Mr. H. P. Robinson, Professor C. H. Bothamley and the Rev. F. C. Lambert, of England, together with those of Mr. G. H. Croughton, Dr. Ellerslie Wallace, Mr. H. Harrison Supplee and Mr. Carey Lea, of our own country, are in themselves sufficient guarantee of the efficiency of this department.

Realizing the impossibility of securing exclusively for ourselves all that is good and worthy in photographic literature, we have culled from foreign journals all articles that we have judged would interest and benefit our readers. Among those to whom we are indebted have been *The British Journal of Photography*, *Photographic News*, *Photographic Work*, *The Camera Club Journal*, *Journal of the Photographic Society of India*, *The Practical Photographer* and many others of equal worth. This department has occupied upwards of two hundred pages,

which the unsolicited verdicts of approval from our subscribers have lead us to believe have been justly appreciated.

Numerous articles have been translated as well from the *Comptes Rendus*, the *Photographisches Wochenblatt*, the *Photographische Correspondenz* and the *Nachrichten*, a debt and a privilege which we would here acknowledge.

Reports of photographic societies throughout the world have received especial attention, and more than sixty pages have been devoted to this purpose. This is a feature which renders the BULLETIN of especial interest to the various societies, and our mailing and subscription lists tell us that our efforts in this direction have not been without their reward.

The answering of queries, covering a vast field of information, is a department which receives especial attention. Over one hundred and twenty-five of these have been received, and answers to them published in "What Our Friends Would Like to Know," showing its increasing popularity and efficiency. These columns are open to all, and it is our aim to make them of increasing benefit to our readers.

This, then, is a brief sketch of the work accomplished in the past year, and we would put the issue fairly and openly, feeling confident of the verdict. Have we fulfilled our promises? The spirit of all that is best in the photographic literature of the world has been represented in our columns, and we have endeavored to cover the field of the professional, the amateur, the photo-mechanical printer, the retoucher, and the numerous other developments, industrial and scientific, in the photographic world.

We feel that we have attained a position where specific promises are no longer necessary, the character and prominence of our journal rendering them useless.

In the past we have done well, in the future we will do better, and no reader of these columns in the coming year will have reason to regret his choice of what has been repeatedly termed "The leading photographic journal of America."

THE PUBLISHERS.

EDITORIAL NOTES.

M. DE ROCHAS claims to be able to affect a photograph and by its means to hypnotize a subject. If the negative be scratched, say upon the hand, while within a reasonable distance of the subject, a red subcutaneous mark will appear on the hands of the original and will be accompanied with the sensation of pain to him. This sensibility will continue for several days, but is not manifest unless the subject be in the neighborhood of the photograph. The sense of touch is the only one affected by this experiment, which fortunately removes the possibility of inflicting serious injury by this means.

Dr. NANSEN, who intends starting on a polar expedition shortly, has supplied himself with a quantity of photographic apparatus for the purpose of recording his journeys in a graphic and at the same time absolutely truthful manner. This use of photography for scientific records is coming into use more extensively every day and bids fair to totally eclipse the sketchbook and pencil. A collection of polar scenery and people will doubtless be both valuable and instructive.

A METHOD of treating prints which have been over or under-printed has been recently devised by Mr. J. Huntley. Those that have been over-printed are toned and fixed in the usual manner and then immersed in a dilute solution of cyanide of potassium until reduced to the desired shade, when they receive a thorough washing in running water. Under-printed proofs are developed with hydroquinone in the same manner as a negative and then finished in the ordinary way. The results obtained are said to be excellent, and we would advise our readers to make the experiment.

Mr. GEO. G. ROCKWOOD, of this city, has recently invented a method for burning in photographs on glass which bids fair to become a very important one. It is based on the property that gelatine possesses of becoming insoluble when exposed to light in the presence of a bichromate salt. Indestructible pigments are combined with the gelatine and remain upon the glass after treatment with warm water wherever it has been affected by the light, as, for instance, exposure under a negative. When dry, the glass is fluxed and placed in a kiln and the pigments melted into its surface.

WE note the increasing application of the electric light to photographic darkrooms. It is far pleasanter, besides being more convenient, and does not use up the oxygen of the atmosphere, besides giving out much less heat than that abomination at the best of times, a darkroom lantern. Where an incandescent circuit is not available, storage batteries are frequently used with very satisfactory results.

THE scientific value of photography was demonstrated in the late Peary expedition to Greenland, in which over two thousand successful exposures were made and but few failures. Not only scenery, but the various types of natives, both naked and clothed, were taken, which will prove very valuable from an ethnological point of view. The landscape views are said to be particularly striking by reason of their curious snow and ice effects.

AT a recent meeting of the Albany Camera Club, Mr. Ledyard Cogswell was elected an associate member, and Messrs. Wm. A. Levett and Charles B. Farnum, of Troy, non-resident members. A lantern exhibition followed the meeting, in which sixty-five slides from the American Interchange were shown. A print exhibition is to be held during the second week in January which promises to be a notable one.

AT the last meeting of the California Camera Club, Mr. W. Shepard explained in detail the workings of a new apparatus for the taking of flash-light pictures, and also made several portraits, the negatives of which were then developed and proved highly satisfactory. Mr. Jones gave a practical demonstration of lighting portraits, showing how it was possible to overcome the defects of the sitter. The attendance was large, and the "talk," as it was called, was a very successful one.

THE first annual print exhibition of the Columbus Camera Club was held at the clubrooms on December 7th, 8th and 9th, from 2 to 10 P.M., each day.

The committee in charge did some hard and faithful work, and, as a result, over two thousand pictures adorned the walls of the rooms. The views as usual embraced a variety of subjects, and, in addition to those made by the members, the prize prints of the National Amateur Interchange were shown.

WE have received a communication from the publishers of *Printers' Ink*, a New York trade journal, in which attention is called to the indefinite and confused state of the laws relating to the mailing of second-class matter. It would certainly seem advisable to take such action in this matter, as would lead to a revision of the statutes, and a consequent cessation of the mistakes and annoyances which, under the present conditions, are of frequent occurrence.

WE learn of the proposed utilization of ammonia vapor in a suitable motor for the operation of a surface railroad in this city. The cost is claimed to be one-third of that under the present system of horse traction, and vastly cheaper than either trolley or cable. It is an experiment which will be watched with considerable interest, and one which may lead to great changes in the present steam engine.

THE first of a series of eight lantern exhibitions and lectures arranged by the St. Louis Camera Club was held on November 26th in the entertainment hall of the Pastime Athletic Club. Mr. William Butler acceptably officiated at the lantern, and the views shown were chiefly of the Holy Land. At the conclusion of the entertainment a number of slides of St. Louis scenery and the adjoining suburbs were shown. The next entertainment will be given this month, and will be entitled, "Pictorial St. Louis."

THE *United States Investor*, a weekly journal published in Boston, New York and Philadelphia, offers three prizes, aggregating \$1,000, for essays of about one thousand words on any American city or town. The essays are to deal with the merits, business, residential or picturesque, of the town or city chosen, and the judges are to be Hon. Henry Cabot Lodge, Hon. Charles F. Crisp and Hon. Julius C. Burrows. The distribution of the prizes will be as follows: \$500 for the first, \$300 for the second, and \$200 for the third.

ON December 5th the Rev. Chas. R. Treat delivered a lecture entitled "The Land of the Meuse and Scheldt," under the auspices of the New York Camera Club, and at their rooms, 314 Fifth avenue. The subject was beautifully illustrated by a large number of well-chosen lantern slides, and the audience was large and attentive. Lantern lectures seem to be daily growing in popularity, and it is indisputable that as a means of illustration the lantern to-day stands without a rival.

THE regular monthly meeting of the Society of Amateur Photographers was held on December 13th, at 8 P.M. The executive meeting was preceded by an illustrated lecture, entitled "Photography in its Relations to Art," by Alexander Black, Esq., of the *Brooklyn Times*. The lecture was largely attended, and the numerous slides, besides being excellent examples of technique, were especially well suited to illustrate the subject chosen.

THE Toronto Camera Club will hold its second annual exhibition and competition on January 12th, 13th and 14th, which will be open to all amateurs. The classes will be divided as follows: Section A, for plates of any size.—1, Landscape; 2, Marine; 3, Architecture; 4, Interior; 5, Portraits; 6, Groups; 7, Lantern Slides; 8, Enlargements. Section B, for plates 4 x 5 and under.—1, Landscape; 2, Marine. Gold, silver and bronze medals will be given, and all entries will close January 8, 1893. Further information as to prizes, regulations and entry forms will be furnished by the Secretary, Mr. Ernest M. Lake, Room 6, 17 Jordan street, Toronto, Canada. Competition of this kind with our Canadian brethren should be productive of good results on both sides, and we hope to hear of a large number of entries.

LETTER FROM FRANCE.

By LÉON VIDAL, Editor *Le Moniteur de la Photographie*.

Reopening of the French Society of Photography.—Formula for Reinforcement by Mercury Bichloride.—Automatic Apparatus and Ferrotypes Plates.—Revindication of Messrs. Lumière in Regard to Amidol.—Valery's Opera-Glass Case Camera and Carpentier's Photo Opera-Glass.—Mr. Lippmann's New Experiments on Photography of Colors.—Proof obtained by Mr. Boissonnas with Dallmeyer's Tele-Objective Lens.—Photography without a Lens.—Large Proofs.—Universal Lens Adapter by Mr. Soiront.—Camera for Obtaining Direct Stereoscopic Positive Proofs in Their True Positions.—Abbé Coupé's Rectograph Chassis.—Bibliography.

After a two-months' vacation the French Society of Photography recommenced on the 4th of November last its monthly sessions. The number of those present was very large, among which were the President of the Society, Mr. Janssen, Mr. Lippmann, of the Institute, Colonel Laussedat, General Sebert, and a great number of notable men of the photographic world. The number of papers was very large, although those that offered real interest were scarce.

Naturally, Mr. Lippmann's introduction excited a great deal of curiosity, and it is probable that many members were drawn by this attraction. We will return to this subject further on.

A Mexican photographer, Mr. Torres, believes he has found a preservative against the negatives reinforced with mercury bichloride becoming yellow. After fixing with hyposulphite of soda, followed by a brief washing, he immerses the plate during thirty seconds in a 1 per cent. solution of sodium chloride. Then it is washed again and introduced into the developing bath of mercury bichloride. After reinforcing, it is washed with ammonia water.

Mr. Eugene Cheron has had made by Marco Mendoza an automatic apparatus for rapid photography on ferrotypes plates. This apparatus is of the simplest kind. The box containing the dark chamber is of sufficient capacity to inclose sensitive plates to the number of eighty, and the trays for developing, fixing and washing.

The subject poses at 1 meter from the objective. At this distance the image is always in focus. The exposure in normal light is of about half a second. Immediately afterwards, by means of an outside button, the plate is made to fall on a metallic carrier, by which means the plate is successively plunged through the different baths, and at the end of half a minute the operation is finished.

Then the plate is dried by means of an alcohol lamp, placed in a little frame and delivered. All that is necessary for the entire operation is about one minute. The gelatino-bromide dry plates are prepared by Mr. Eugene Cheron. This apparatus of a reduced size can be made as a toy for children, and it will certainly have a great success.

In its regular size it will find its place at all picnics and wherever there is a large number of people, seaside resorts, railroad stations, etc. It is better than an apparatus of a more complicated mechanism, and which often works in an imperfect manner.

The firm of Lumière, of Lyons, in view of the employment of the amidol developer prepared by the German chemist Hauff, has thought it its duty to issue warnings as to its right of priority. The firm supports its claim on the publication of their notes in regard to developers of the aromatic series. The free base manufactured by Messrs. Lumière, or diamidophenol, constitutes an excellent developer which can be employed in alkali, and of which the following is the best formula :

| | |
|-----------------------|-----------|
| Sodium sulphite | 80 grams. |
| Diamidophenol..... | 5 " |
| Water | 1 liter. |

This developer is preserved in good condition in uncorked bottles, and gives beautiful images that are clear and intense.

Manufacturers do not cease to seek new models of portable photographic apparatus favorable to amateur work. They endeavor above all to find forms that will conceal the real object of the apparatus.

It is thus that Mr. Valery has been induced to manufacture his camera called the Photo Opera-Glass Case, which, carried by a shoulder strap, absolutely resembles the case of field glasses used in horse-races.

This case constitutes the dark chamber. It opens at the middle like a book and two articulated levers maintain it open. The plateholder is introduced through the opening and the apparatus is ready to work. It is simple and well made. The size of the plates is 9 x 12 centimeters, although the outside appearance is that of a field-glass case, the hidden inside part is of aluminium and the workmanship is perfect.

Mr. Carpentier, a manufacturer of mathematical instruments, has, for his part, invented a photographic opera-glass which is one of the best arranged. We have here also a case, but this case contains the photo opera-glass which is taken out to be used like a real opera-glass, with the difference that the small end is directed towards the spectators. Mr. Carpentier says that this gives a gay expression to those that are reproduced. That seems natural because they are amused at seeing the glasses being used through the large end. The size of this charming little apparatus is that of a field-glass of medium size. One side forms the dark chamber, and the other serves as a finder. By an ingenious method, twelve sensitive plates can be successively placed at the fixed focus of the lens. The shutter gives an exposure varying from $\frac{1}{50}$ th to $\frac{1}{100}$ th of a second, and it has the advantage that it can be mounted without uncovering the lens. Mr. Carpentier advises that the apparatus be held at the height of the eyes, the same as a true opera-glass. He shows two proofs, one taken with the apparatus at the height of the eyes, and the other at the height of the waist. They differ essentially, and that can be well understood. The pictures given by this photo opera-glass

are of a very small size—9 x 6. Mr. Carpentier has completed his system by the addition of an apparatus for an enlarged printing. It is used with the gelatino-bromide sensitive paper, and therefore gives the image by development. The direct proofs non-reduced can be very well used for projections, after having made diapositives from them.

Mr. Lippmann desired to repeat in the presence of the French Society of Photography the communication which he presented several days previous (Monday, October 24, 1892), before the Academy of Sciences, relating to the new experiments on the photography of colors. He tried to project the solar (or electric) spectrum on the albumen or bichromated gelatine film. After an exposure of about fifteen minutes, he immersed the exposed plates in water and almost immediately he saw the colors appear wherever the light had acted.

The image loses its colors when dried, but it regains them when it is wet. It is sufficient to cast the breath over its surface in order to produce the expansion of the albumen or the gelatine, and consequently to make the colors appear.

The experiment is effected in the manner indicated by Mr. Lippmann at the beginning, when he operated on collodion or albumen films sensitized with silver.

Any one may easily repeat this curious experiment if he is in a condition to, or has the means of, projecting the spectrum directly on a bright bichromated plate. The arrangement for exposing is of the simplest kind. A rubber tube is placed against a glass plate of the same size as the one which has been covered with bichromated gelatine. The latter is applied against the tube and kept attached to it by means of four clips. The vacant space, which is only 2 or 3 millimeters thick, is then filled with clean mercury. The whole of the above is placed vertically in the interior of the dark chamber.

Care has to be taken to fix beforehand the spectral projection, so that it will fall exactly on the spot where the sensitive plate will be. The yellow color communicated to the organic medium, constitutes on the surface of the latter an absorbing screen for the blue and violet radiations. Thus the latter are without action on the sensitive film, because the developed spectrum contains neither blue nor violet. But there can be seen all the colors that are not absorbed by the yellow of the bichromate of potassium.

This experiment is of great importance, because it confirms the interference theory previously announced. The action of the light produces maxima and minima from which result the fringes of interference, and there remains on the film a laminated structure, a network like that of superposed mica leaves. This network shows itself by the swelling of the binding material. It disappears on drying. The entire laminated structure sinks, forming a continuous mass, so to speak, of the same surface of refraction.

The complementary colors appear when the spectrum is seen as a transparency. A peculiarity worthy of being noticed is that the colors can be seen at different incidents without the necessity of seeking a convenient angle of reflection, as is the case with images given by silver.

The presence of humidity being necessary, there could be found a means of keeping the surface always humid by the aid of glycerine, but with the condition of having the plate absolutely enclosed in glass and perfectly protected from all communication with the outside air.

It is to be presumed that an experiment of the same kind, made with sensitive films of another nature, would give similar results, especially by operating on vitreous sensitive films.

We do not say that this method will lead us to artistic and industrial reproductions of colors. But we cannot but recognize that we already possess a serious scientific basis which can be perfected, and from which we will probably obtain the most unexpected results. Some persons expressed some doubts as to the reality of Mr. Lippmann's theory, but he now finds that the experiments on the bichromated gelatine furnishes him with the means of answering them in the most peremptory manner.

The view obtained by Mr. Boissonnas with the Dallmeyer tele-objective lens was presented by Mr. Janssen to the French Society of Photography, and it was very much admired. It is of the size of 50 x 60 centimeters, and it is a view of Mont Blanc, taken from Geneva, which is a distance of 70 kilometers. This remarkable result is due, not only to the special optical disposition, but also to the orthochromatism of the plate used, and to the use of the convenient yellow screen, selected in order to absorb all the blue radiations of the air interposed between the mountains and the camera.

Mr. Janssen insists on the necessity of operating thus, and he accords Mr. Boissonnas the most merited praises.

Some beautiful views, of the size of 50 x 60 centimeters, were presented by Messrs. Dehors and Deslandres, who obtained them with their "Stenope," that is, with a simple small hole in place of an objective.

Mr. Soiront has manufactured successfully a universal lens adapter, iris formed, which permits the adaptation of any size lens. By opening or shutting, we have a circle of a larger or smaller size, but always continuous and of any diameter required. It is very ingenious and useful.

Mr. Donnadiou has had made by Messrs. Poulenc Frères an apparatus to obtain direct stereoscopic views in their true position. This apparatus is well adapted to the object for which it was made. It dispenses with the necessity of cutting either the negative or positive in order to obtain the transposition of the images. This is effected naturally in the apparatus, and the two contiguous views find themselves exactly in their true place on the glass on which they are supported.

Another instrument which is very useful to all devoted to projections is the rectograph printing frame of M. L'Abbé Coupé (of Gand, Belgium). This printing frame is surmounted by a broken pyramid, and the light penetrates from the upper part of this pyramid through openings or diaphragms of varied diameters. At the bottom there is a printing frame which receives the plates to be printed and the sensitive surface. Over this combination there is a square or rectangular tube meant to eliminate the oblique reflections produced by the interior sides of the pyramid. This disposition is for the object of utilizing only the rays of light that go in a straight line, which permits of obtaining images of the greatest clearness and fineness. The comparison of a proof thus obtained with one obtained on an ordinary printing frame demonstrates the superiority of L'Abbé Coupé's rectograph.

The past summer has not produced many photographic works, and we must, therefore, call attention to the four pamphlets: Mr. Charles Fabre's *Traité Encyclopédique; Le Traité Théorique et Pratique du Virage et Fixage*, by

Mr. Mercier; *Les Impressions aux Encres Grasses*, by Mr. Trutat; *Figaro Photographe*, a work of popular, without any technical, value, and besides, full of omissions and errors.

It is a pity that this publication should not have been treated in a more serious manner, and that the typographical illustrations, of which it contains a large number, are not of such a value as to do honor to the workshops that have produced the typographic cuts.

If it had been better accomplished, the *Figaro Photographe* would have merited to be included in the documentary library of photography.

PARIS, December, 1892.

A NEGATIVE EXPERIENCE.

BY ADELAIDE SKEEL.



WHAT we need in this lonesome house of ours, Will, is childlife."

"We are bachelors, Marcus."

"I know it, but we are not monks, and besides we need rousing. I wish we had children about us to waken us up a bit."

"Bachelors, are we not?"

"And I must have a model for my lantern slide at the December Exhibit."

"Oh, I see, but have you not about five thousand slides already?"

"Yes, but no good subject for Christmas; and if I had a little boy here, I could pose him with holly in his hand, or kneeling, or with the mother."

"I draw a line at women, but fill the house with all the children you like, only empty it again before I come home at night. I do not ask much for the privilege of being a bachelor, for, since you ran from nervous prostration into amateur photography, I try to treat you humanely as your sad case deserves. Good morning," and Will Paige was off in his dogcart to catch the early morning express for the city, while Marcus, the stay-at-home brother, all heedless of chaffing, went slowly to his darkroom to consider his Christmas slide. Of course, it was not December yet, but balmy Indian summer, for only tyros write stories or make pictures of Santa Claus and snow storms when the season is really on hand; and moreover, Marcus Paige, in whose ears the horns of elfland blew right loudly, was quite enough of a poet to create an atmosphere of mistletoe and plum pudding out of October haze and yellow pumpkins; yes, he could create an atmosphere, but not a model. He always lacked a model; it was his chronic state, as not only were his demands larger than the scantily settled mountain district could supply, but he lacked the magnetic power to draw people towards him. He could pay, but some things cannot be paid for in cash. Neither brother had the elements of popularity, either by inheritance or training, and circumstances of peculiar loneliness had developed their instincts of personal preservation beyond all other passions. The neighbors respected them; society invited them; fortune favored them, and yet they were bachelors. Praise be to Daguerre, Maddox, Brown, and the rest, however, photography, unlike court plaster, heals all wounds including those of love, and

whether Marcus felt fate to have been unkind or not, he forgot his singleness when once the door of his darkroom closed upon him. He was the house-keeping brother, but the cook, and the waitress, and the laundress, and the coachman, and the gardener, and the boy in buttons, had the strictest orders never to let white light or outside care in upon him when he was developing within his damp fastnesses, and it was therefore greatly to his surprise and disgust that he heard his name loudly called.

"Mr. Marcus, Mr. Marcus, will you be after coming out presently?" from Sally Blossom, the cook, who evolved French soups from inner consciousness and shin bones, because neither brother could sit down to a one-course dinner without a blush of shame.

"Marster Markiss," from Adelheid, the German maiden who had left her lordly castle on the Rhine for ten dollars a month and the pleasure of serving the Paige family.

"Marcus," from Rose, the American Beauty, whose familiarities were pardoned on account of her faultless ironing of shirts.

"We be alone without ye," from Sally, again.

"We lack you," picturesquely, from Adelheid, taking a Theckla-like pose.

"Would you be fooling with pictures and a child in distress?" reproachfully, from the washerlady.

"What is it?" from the disturbed amateur.

"A man," from all three voices at once.

"He is drunk."

"Tight."

"Full."

"Jagged."

"There is a child with him."

"She weeps."

"He shouts."

"She is bareheaded and barefoot."

"It is a shame."

"Call the p'lice, sir."

"He has stolen her from her mamma."

"He is a brute."

"He should be beaten."

"We are afraid," from all three voices, again, followed by shrieks feminine and tears *ad lib.* Marcus opened the door.

"Where?" he asked, humbly, rubbing his eyes in the bright light, and wiping his fingers on his handkerchief with the vain hope Rose would not see his crime.

Then followed whispered cautions, pointings, warnings, hints, allusions, head-shakings, and finally a sad groan from Sally.

"I fear she has gone with the brute, sir." But, no, the brute was descried in the dim distance beyond the shrubberies, staggering away, but the barefooted, bareheaded, blue eyed, curly-pated three-year-old toddled forward with steps as uncertain as the man's, to put her not over-clean little hand in Marcus's, and lisp "Papa." Who could forgive a laugh at this moment? Certainly not Marcus Paige, with his instincts of self-preservation all aflame; yet his dignity forced him to take a decided step.

"Wash her," he said to Rose, and to Sally, "Feed her," adding, "And when she is ready bring her to me and I will take her picture. I was expecting a model."

The giggling ceased and there was more coaxing and petting done than work for the next hour, but at last the child was brought back laundried and filled, and the lantern-slide design made. It was a success, everything was a success, till Will came home at night.

"Our need of childlike and models is supplied," he said, drily, when every member of the household had told him the story.

"Yes," answered Marcus, somewhat wearily, for the entertainment of the little girl through the long hours of the afternoon had exhausted him.

"I thought a model for a Christmas theme was of a different gender."

"Brother, do not be irreverent."

"I rather wished to caution you."

"Would you like to see my negative? It is in the rack, drying; but I will fetch it."

"Thanks; no. You have the original, for keeps, I understand. She or it is a permanency, I believe?"

"I don't know; the man was drunk, and he staggered away before I really saw him."

"Well, I trust you will not get in jail for abduction; but you can plead freshness, nervous prostration, and amateur photography, and if the Judge has a Kodak your sentence may be light; or you can bail yourself out by the sale of your prints. Let us have dinner, as I am off to town by daylight, as your philanthropy and photography together have made "no place like home." See you later, when you have served your time, or your adopted daughter is married and off your hands."

The to-morrow's waking was a fearful one, for Will had gone with his largest bag, and Marcus was left to hear the child's cries louder than the Elfland horns. The servants had tired of the added care, and with fears of a lawsuit, of gossip, and of a most realistic life burden self-imposed, the poor bachelor began to play nurse. It was no play, either, to be followed by the little toddler from studio to darkroom; to see cherished cameras made into baby-houses, to find the white kitten thrust in the hypo tank for a bath, the best of his negatives pulled down to build glass castles, and his deadliest poisons tentatively held to baby lips. Presently a ring at the doorbell made a pleasing diversion. Visitors were rare at Homelands, but an occasional charitable solicitor in the shape of a married lady or elderly simpleton forced her way in. It was one, or, rather, two, of this ilk who now waited Marcus in the dreary drawing-room.

"Mrs. Munn and Miss Lionel," the elder and more decided of the two dusty, travel-stained women said, evidently introducing herself and her friend quite impersonally.

"We have had a long drive from Quassaic this morning, having lost our way, and crossed the railroad track six different times," Miss Lionel said, somewhat reproachfully.

Marcus regretted it, but could not imagine why the callers had taken so much trouble to find him. People living on the mountain literally and figuratively looked down on people living in Quassaic, for reasons not easily explained.

"We come from the Orphanage, for we have had a sad experience and loss——"

Marcus felt for his purse. Some things could be bought if not everything, and callers go when a subscription list is filled up.

"Ours is an old institution, and we take the best care of our little ones——"

He began to wonder if a 5 or a 10 would send them away.

"We have over fifty children, and never before have had to call on a stranger for help."

This Marcus thought apocryphal, but was silent.

"Now, we must ask you, on your honor, and what you say will be of infinite assistance——"

"At your service, ladies," said the brave host, unflinchingly, although he felt himself being drawn into a maelstrom of horrid possibilities. Maybe, these women in the dusty black dresses wanted him to be on their Board, or to exhibit his lantern slides at a dreadful bazaar; or, worse, to make an address at some anniversary. He forgot recent domestic troubles in his nervous dread of some self-immolating task which he should not have the nerve to escape. He forgot his other little guest, but she did not forget him, and at this moment appeared on the scene, and before he had time to be embarrassed by her presence both ladies were screaming——

"Our darling Suzie! Here she is——found at last! Oh, dearest baby, God bless you and Mr. Paige, too."

Visions of trials for abduction evaporated when Marcus saw the real rapture of Mrs. Munn and Miss Lionel, and he shamefacedly reconstructed his estimate of them when he saw their faces illumine with tenderest mother-love. The baby went to them confidingly as she had gone to him—as confidingly, apparently, as she had gone away from them at her drunken father's instigation the day before; and here was the whole mystery unravelled.

"Yesterday was our visiting day at the Orphanage, and when the Matron was out of the room the father of our darling pet, put with us by her mother to keep her safe from the villain—Oh, Mr. Paige, half our children come from such unhappiness, and shiftless marriages fill up asylums, you know—carried her away, and we only by chance heard of her up here. How can we thank you or your wife for your care?" All this came from Mrs. Munn, for Miss Lionel, with a single woman's divining power, knew better.

"We will take Suzie, and go," she said. She did not believe there was any Mrs. Marcus, and was sure the child was not welcome. So they took her away, and the bachelor was left with memories and a lantern slide. He did not ask for more, nor did he ever exhibit his Christmas picture of childlife.

[Written for the International Annual. Received too late.]

HINTS ON PHOTO-ENGRAVING.

BY "CUPROUS."

If you have over-printed the plate a few drops of liquor ammonia added to the developing water will help the development.

If your negative does not possess the required density it may be re-intensified by placing it in the copper sulphate solution, and then, after washing well, place it in a silver solution of 30 degrees hydrometer.

If the lines are clouded they may be cleared by flowing the plate with dilute nitric acid.

To put a black line around half-tones, scratch through the negative film before stripping.

To put a white line inside the black, scratch through the film on the metal.

You can attach the metal to the wood block by boring holes in the latter and running in solder, first having placed the metal on the block.

Make your own stripping solution by dissolving Para gum in benzine.

Use leather collodion in stripping. This is made by adding a few drops of castor oil to a 2 per cent. plain collodion.

Should you wish to re-ink the plate, coat it with gum and nut galls (made by adding 2 ounces decoction of nut galls to a pint of a solution of gum arabic of the consistency of cream), allow it to dry, then with a clean sponge wash off the gum, and, keeping the plate just damp, roll up with a leather roller and fatty ink.

Don't try to fill up your high lights in half-tone negatives too much. Rather regulate this in the printing.

You can improve photographs for reproduction by a judicious use of India ink and Chinese white, darkening down the foliage and building up the high lights as needed.

To bleach out silver prints use a solution of potassium cyanide, to which has been added a few drops of iodine.

The best collodion to use is one with an excess of iodide and a small amount of bromide, and quite rich in cotton.

Bromides tend to softness and iodides to the opposite. More cotton helps the intensity.

Dilute acetic acid will cause the film to leave the plate when you wish to strip.

The distance of the screen-grating from the sensitive plate regulates the size of dots in half tones.

Don't go ahead until you are sure you are right.

SNOW PICTURES.

BY REV. F. C. LAMBERT, M.A.

THAT a large proportion of photographs of snow pictures entirely fail to convey at all satisfactorily an adequate or agreeable impression few, if any, will deny. And as many of us are more than likely to be trying our hands upon scenes of this kind ere long, possibly a few suggestions may be seasonable and (it is hoped) helpful also.

A number of snow pictures were recently submitted to the present writer for adjudication. A preliminary examination indicated three main directions in which failure must be recognized as possible in order to be avoided or at least "circumvented," viz., as regards, 1, subject; 2, technique; 3, final *et ceteras* (*i. e.*, frames, mounts, etc.). Under these three heads it will be convenient to arrange our suggestions.

1. *Subject or view point.*—If this presents impossibilities it is obvious that no technique can redeem the picture; therefore, the first condition of success implies a subject which is amenable to treatment. First, then, let it be remem-

bered that the fundamental impression of snow scenery is that of strong white light. In order to express strong and bright light there must be a long scale of tones, there must be many gradations of tone, and the lighter tones must prevail. The first of these conditions by contrast implies brightness and light. The second gives the impression also of refined and subtle light. The third conveys the feeling that the light is general, *i. e.*, not coming from one point, as in artificial illumination. Now, what have we in print No. 1? A dark cottage in foreground, and the rest a large, blank, unbroken expanse of freshly fallen snow, two or three notes in the scale—these a long way apart—and practically no connecting links whatever. Failure is inevitable. No. 2, a farmyard foreground, a general medley of dark and uninteresting objects and a bit of open distance which may be snow-covered hills or sky. No. 3 is an open landscape of snow-covered hills, etc., and with no middle distance or foreground. This, at first sight, looks more like a lightly printed proof of a spring landscape than a winter or snow scene. No need to continue the subject catalogue.

To sum up then, as far as may be, with respect to choice of subject or view point: Avoid a subject in which there is much dark material in the foreground, and equally avoid a subject which has no foreground at all. In this latter case we miss the feeling of space, distance, relief, open air, and full light. Avoid also anything like reticulation of strong dark against light, *e. g.*, network of dark tree trunks, palings, open woodwork gates, etc. The effect of this is to irritate by a chessboard-like pattern of black and white patches. On the other hand let your foreground be simple in form and subject—try to arrange for one (or at most two) small bit or patch of a dark object, and, if possible, let it be led up to by a series of less dark steps; at the same time, if you can bring your chief dark near to your prominent high light you will thereby gain much by way of contrast. Moreover, let it be remembered that a large expanse of smooth freshly fallen snow does not yield a snow-like print, but usually a patch of white paper. Undulating ground is to be preferred to that which is quite flat as yielding more gradation. Wind-drifts and their exquisitely transparent shadows are of immense value in expressing the luminosity of snow. Be cautious in selecting a roadway where the track shows as a string of black dots or maze of wheel lines. You are more likely to get a picture along the side than in the middle of the track, unless, of course, the snow be very deep and the tracks or markings are few, not confused, and not black patches.

2. *Technique*.—This, of course, is always the servant of the subject. Assuming, then, that the subject chosen and exposed upon is one showing a long scale of tones from a small but important dark strong note towards the foreground, surrounded by harmonious chords or links of lighter notes passing onward and upward in the scale, to a patch of freshly fallen snow sparkling in the winter sun—not forgetting a soft, pearly grey-blue sky. How are we to develop all this? That is the question. The problem is to get a long range of tone without weakness, and the most direct way is to aim at gradation first, trusting to getting sufficient vigor afterwards.

And this, because if we fail in gradation nothing can save us, but if we get gradation and yet lack vigor our failure is not absolute. With the majority of commercial plates abundant gradation may be obtained by slow development with a developer very weak as a reducing agent. For instance, if the plate, *mutatis mutandis*, yields a satisfactory summer landscape negative with, say, 3

to 4 grains of pyro per ounce of developer ; then in this case the pyro may advantageously be reduced to $\frac{1}{2}$ a grain or even less per ounce. This will work slowly, and the plate should be kept covered as much as possible during the early stages at any rate. Development is continued with this thin-image producing solution until the plate by transmitted light shows *some* ghostly detail in all parts of the picture except perhaps the extreme dark end of the scale. The plate should now be well rinsed, and then with a new lot of developer containing something less than the normal amount of pyro (say two-thirds of usual quantity) development is continued to something rather under than over what is regarded as normal, constant care and watching being given to the high lights. It must not be forgotten for a moment that, except a very small patch of the very whitest of the sunlit clean snow, no part must be so dense but that some printing power of light will pass through it. Furthermore, it should be remembered that, as the first stage of development has been long and slow, there will be some staining to be allowed for ; and, as is usually the case, the density of a slowly grown deposit is finer and has more power of light blocking than a quicker formed and coarser grained deposit. Delicacy should therefore be aimed at, with a view to err, if needs must, on the side of too little rather than too much density. In the former case by adjusting the printing light much may be done. In the latter little if anything beyond producing chalky prints is open to us.

One glaring defect in many snow pictures is in the false relation of the sky tone. In the majority of prints the sky is represented by a blank space of white paper.

Whereas, in Nature, when "Virgin's mantle clothes the field," the snow is many degrees brighter and higher in the scale than the brightest of blue skies.

There is floating in many photographers' minds some strange legend or belief that the sky is the source of illumination, and therefore is always the lightest part of the picture. This is founded on misconception. Whereas, on the contrary, sunlit snow is often many degrees lighter than the mist-laden, leaden-grey winter sky atmosphere, which, to a considerable extent, relies for its light upon the sunlight reflected from and scattered by the snow. (The same thing, in cases, holds true where the reflected light from still water is much lighter and brighter than the sky tones.) The truth of the foregoing may easily be verified by any observer who will take the trouble to compare carefully the relative brightness of snow freshly fallen on a tree-branch with the sky background. Compared with the white snowline, the sky looks quite dark. In fact, the sky often seems nearer in tone to the dark under side of the branch than to the upper white snow line. It is obvious that if the snow on the branch were of the same, or even nearly the same, degree of brightness of the sky, as usually represented in photography, it (the snow) would fail to impress us in the way it does by virtue of its intense whiteness. A white object against a white background is no more seen than a black object against a black background. To obtain sky tones in anything like correct relation, we may avail ourselves of the aid of color-corrected plates. But even then there still remains all the above-mentioned need of care in development, otherwise the sky will grow too quickly in density, and get hopelessly clogged up long before anything like the possible range of gradation has been attained.

Nothing has been said upon the subject of printing processes, because that is largely a matter of personal liking. It is sufficient to say that whatever process

is selected—it must be one which will give the utmost value of the negative gradations, and its high lights must be pure and snow-like.

3. *Mounts and Frames.*—Metaphorically speaking, many a photographic ship founders for lack of a barrel of tar. In other words, many a creditable print fails to meet with the attention it deserves, because it is served up to the spectator in unpalatable surroundings.

As regards mounts, the general principle, of course, applies, viz., that the function of the mount is to isolate the print from its surroundings. Obviously, then, the mount must be in general harmony with the print it supports (in more senses than one).

A light print, *i. e.*, one in which light tones prevail, calls for a light-toned mount—quiet, subdued, and in no way obtrusive or conflicting with the picture. Thus, a white mount for a snow picture must be avoided as tending to seriously weaken the implied whiteness of the snow scene. Similarly, a very dark mount would tend to give a chalk and blackboard effect. Perhaps, on the whole, a very tender, delicate, cool, light pearly-grey mount best helps forward the feeling of a snow scene. And let it be noted that, as the characteristic impression of snow scenery is lightness and degrees of lightness, apart from color, it is consequently desirable to avoid suggestions of color, as, for instance, by inserting such pictures in velvet or plush frames.

Although it is the custom of several thoughtful workers to insert their snow scenery in dull black and gilt frames, yet it may be doubted if this, in all cases, is entirely satisfactory. At any rate, it may be suggested for trial that a frame of plain rather light oak will, in some cases, help the general harmony and feeling of the scene. If it be finally decided to adhere to the dull black, with gilt slip, it will be found highly desirable to keep the frame rather narrower than usual, conveying the feeling of lightness, and this will be in general harmony with the small amount of strong dark in the foreground of the print.

As regards the hanging of these pictures on the walls of ordinary rooms, perhaps the best general effect is in a position of strong but diffused light, rather than in a small concentrated lighting, such as is often suitable to pictures of indoor figure studies.

First and last, for the success of snow scenery, let it be remembered that the first and chief condition of success is delicacy in gradation, and all else must serve to obey that end.

[Written for the *International Annual*. Received too late.]

THE VALUE OF FOG.

By S. R. STODDARD, *Glens Falls.*

THE average seeker of picturesque Nature in photography will no doubt learn with surprise that any one can see any good in fog from a photographic standpoint.

I felt so once myself, and still feel so in regard to the chemical kind. The kind of value is found in Nature.

Fog was something to be avoided in the old days of wet plates as a thief who would steal everything from the picture except the immediate foreground, who would magnify distances and make the innocent haze, that was but a thin veil

when looked upon with the natural eye, a thick, all-obscuring blanket in the eye of the camera.

In these later days of orthochromatic and isochromatic plates and films, even the ordinary dry plate preserves the color values to a degree hardly thought possible in earlier days. The haze that of old was such an objection is now a thing rather to be desired as necessary to the rendering of true aerial perspective, and it is not uncommon that a subject will be rejected for the time because the atmosphere is too clear to give good results. The production of pictures by the aid of the camera, now acknowledged to be an art, was of old considered merely a mechanical operation where detail of the finest, hardest and most minute nature to the extreme end of the field was striven after as altogether desirable. The photograph generally considered most successful was that one which perhaps had no more atmosphere than the average Japanese picture with all its uncompromising lines and barbaric wealth of violently contrasting color. Instead of this the public now ask for a picture that shall show, in distinctly marked planes, distances between succeeding lines and objects as displayed in a well-marked veil of haze. Occasionally a subject, standing by itself, may not owe its attractiveness to this cause, but generally the landscape, without its aid to mark the distances, will be rejected as inartistic and lacking in something which the would-be purchaser feels although he may not stop to analyze.

Luckily the demand for finer feeling in landscape work has but kept pace with improvements that have made better work possible. The crude productions of earlier days, which saw no incongruities in dead-black shadows, chalky skies and gray, lineless water, give place to full detail in the remotest shadow where the human eye would seek for it in the original, in perfectly defined clouds and in the myriad forms of rippling, radiant, glistening water. Lacking all this the picture is in a degree a failure.

Now for the application. It is possible with many of the plates of to-day to wrest, from the most unfavorable conditions, comparative success. While one may indulge in wide latitude as to time, and still be able, by proper development, to make a satisfactory negative, judicious timing and skillful development will often secure a triumph over difficulties which would have been unsurmountable under the old régime. A wood interior is generally one of the most disappointing of subjects that can be attempted outside of effects that owe their beauty to color. A woodland path in the sunshine usually comes out in the picture a confusing tangle of intermixing branches and a jumble of black and white patches; in almost every case the more satisfactory result is gained by making a long exposure on a cloudy day. One of the best wood views I ever made was of a mountain trail that ran through scattered, moss-draped spruce and cedars; the exposure was made in a snowstorm, the falling snow acting as a fog to measure off the distance between objects until the path and shrubbery between the trees finally faded away into dusky distance. Again, on a recent trip to Alaska, I wanted photographs of certain totem poles at Fort Wrangel. The weather was undeniably bad, even for that land of almost continuous drizzle, suggestive of a London fog with falling rain. The exposure was made from under a dripping umbrella, intentionally under-timed, and development restrained by aid of bromide. Result, a soft negative full of detail, but with contrasts infinitely greater than seemed possible at the time. There was even a dignity and exaggerated size lent to the figures by the mist that showed faintly

over all. *Per contra* : On another occasion the sun had set and the light from the sky simply remained (it was nine o'clock, in fact, but in Alaska this is not very late after all, for in June the sun stays out nights until almost ten o'clock, and gets up a little past three in the morning). It was undeniably dusky, however, and the air was uncommonly free from mist. A negative was secured, but it was harsh and without atmosphere. If it had been raining or even a little foggy when the exposure was made, a soft negative would undoubtedly have resulted.

I made a picture in the Adirondacks recently with my "Jumbo," which takes a 20 x 49½-inch film. Subject, Keene Valley. Time, about the middle of October. The mountains were covered with blue haze which, ordinarily, would have rendered it utterly impossible to show distant features of the landscape. The film used was a Carbutt orthochromatic, with which the maker recommends the use of a thin color screen ; but I did not use it in this case. I gave a long exposure and restrained the development, with the result that from foreground to distant mountains, including Mount Marcy, fully 10 miles distant in an air line, details came out clearly and seemingly as distinct as they appeared to the naked eye. By under-timing and forcing the development in this case I could easily have sent even the moderately distant mountains out of sight ; by giving greater time and working for detail I could have made a presentable negative with even a greater amount of this marvelously beautiful but utterly aggravating Indian-summer haze.

In instantaneous work beginners are advised to regulate their shutter to work rapidly if the sun is shining brightly, and more slowly if the sky is overcast. Within reason, I regulate my shutter in inverse ratio. A clear sun gives intensely strong contrast in light and shadow, like things seen under the glare of an arc light. With white clouds, the light is distributed more evenly, objects are lighted better, and shadows are less intense. With the sun shining brilliantly and without floating clouds to diffuse and reflect his light, I aim to give all the time necessary to get detail in the shadows, and develop to get that out as quickly as possible, leaving the sun-lighted portions to take care of themselves. An overcast sky often yields more light than comes from a clear sun and blue sky, but the tendency is to flatten for lack of well-defined shadows. To neutralize this effect I make shorter the so-called instantaneous exposures in an overcast day than when the sun is shining brightly, and develop to give the greatest contrast possible.

There certainly is some virtue in fog.

[The Journal of the Camera Club.]

SPEED AND EFFICIENCY OF SHUTTERS.

BY CAPT. W. DE W. ABNEY, C.B., R.E., F.R.S.

I HAVE said that I would give something about shutters, which to the lay soul might mean something about windows, but which to the photographer means a piece of apparatus which is the very joy and toy of his existence. There are so many shutters that I can only touch upon a few typical ones, or I should rather say examples of types, for if I named any as typical I might be met with the objection that they are not so. What I propose to do is to show you how the speed and efficiency of a shutter can be determined, if not readily, at least effectively. I propound first as an axiom, "That a theoretically perfect shutter is that which exposes every part of the plate at the same time, and for the

same length of time, and at the same time utilizes the full aperture for the whole exposure." The term "speed of a shutter" is well understood: it means the interval of time which elapses between the first and last glimmers of light which pass through it and strike some given part of the sensitive plate; but, as we shall see by and by, it does not follow that the speed of a shutter is the same for every part of the plate. The speed, however, has nothing to do with the efficiency of a shutter. The efficiency of a shutter is best expressed by a fraction, the numerator of which expresses the actual quantity of light reaching some one part of the plate under consideration, while the denominator represents the total quantity which would reach the same part of the plate were the full aperture utilized during the whole of the exposure. Thus the efficiency of a shutter may vary for every part of the exposed plate.

The only shutter which fulfills the condition that this fraction is unity is that which moves close to the plate. It is then evident that the whole aperture of the lens is acting on the different parts of the plate during the whole exposure given to such parts. Of course, different parts of the plate are exposed at different intervals of time and for different lengths of time; but that does not affect the efficiency value as defined, but it lacks this essential to constitute it a perfect shutter. On the other hand, the only shutter which exposes the whole of the plate at the same time and for the whole period of exposure, is a shutter which works at the diaphragm of the lens. The shutters which work in front or at the back of a lens are intermediate in action between those two types, exposing more or less of the plates at the same time, but intervals of time elapse between the mean exposures of one part of a plate and another. In every shutter, therefore, which does not work at the diaphragm of the lens there is one inherent deviation from the ideal shutter, viz., want of simultaneous exposure for the whole plate, and we have also to fear that the exposure throughout the plate will not be equal, for we have to remember that a shutter, at the commencement of its motion, must go slow, and then by gravity or springs, or a combination of both, attain greater rapidity. This inequality is reduced to a minimum when means are taken to ensure that the whole lens is uncovered for a period long in comparison with the time of opening and closing. Many ingenious contrivances have been made to secure this, but, do what you will, the inequality must perforce exist.

With the shutter at the diaphragm, as before said, the exposure is the same throughout; but, owing to its position, a good factor of efficiency for a large aperture is difficult to attain, though it is better with a small diaphragm. If we reduce the stop to a pin's point it is evident that we should have the maximum factor, unity, of efficiency.

The shutters which give the least satisfactory theoretical results are those which are attached to the front or back of the lens, and open and close centrally. For it will be seen that the margins of the plate then must of necessity receive a shorter exposure than the center, which is just the opposite of what should occur, as even with full aperture the projection of the aperture of the stop is smaller than the aperture looked at centrally, and, the plate not being perpendicular to the rays coming through, the quantity of any light falling on it is again diminished. A shutter which opens and closes marginally to the lens would be better.

First, then, let us consider how the speed of a shutter may be ascertained without considering efficiency. There are a good many plans which are available. The first which I shall notice is a very rough-and-ready way, which is open to any one. Let a man stand with a white rod against a dark background, such as trees, and make a circle with the rod once, say, in a second. If he then be photographed while so occupied, the rod will be found to have traveled perceptibly during the exposure. The angle through which the end of the rod has traveled will give a measure of the speed, when the angle which the end of the rod occupied, when still, is deducted. I show a slide of this which illustrates my meaning. In an article in *Photography*, written in the summer, I have already pointed out modifications of this plan, which I need not

therefore repeat. The next plan is to have white sectors on a black disc revolving at a known speed, and by an artifice their images can be made to cover the whole plate. If the whole of the plate in a hand camera where the focus is fixed, or nearly so, had to be covered by a properly focused image, the disc would have to be of unwieldy size. To avoid this, if a plano-convex lens of about 6-inch focus be placed in the front of the camera lens, the focus of the combination is shortened to nearly 3 inches, if the latter have a focus of 6 inches. The disc need not then be bigger in diameter than the diagonal of the plate in order to obtain an image of the same size, and it would have to be placed 6 inches away. If sectors are cut out of the disc, and the sky is visible through the apertures, a good record of the exposure required can be obtained. Suppose the original angle of the sector were 5 degrees and that of the photographed image covered 15 degrees and that the disc was rotating three times a second, evidently the speed of the shutter would be $\frac{1}{108}$ th of a second, for the disc would move 1,080 degrees in one second. The boundaries of the sectors would not be found to be straight however, in the case of a shutter moving across the lens. They would be curved, and if opposite sectors be photographed on each side of the center of the plate, a measure of the curvature will give a measure of the duration of total exposure. Thus, suppose the sector areas curved away $7\frac{1}{2}$ degrees on each side, the exposure would have lasted altogether $\frac{1}{72}$ d of a second. It would also be found that the angle of the photographed image of the sectors at different parts varied slightly, which would show that the times of exposure of each portion of the plate differed throughout. The slide I show will well illustrate this fact. In this case holes were pierced along radial lines which were at right angles to one another; the bending of the radial lines at the side of the plate is well shown.

I have tried several variations of this system and they all give fairly even results.

Now, I am the possessor of a new form of camera to which an ingenious shutter has been attached; and this I desired to test more fully, which I did by a modification which proved very useful.

A card which ran in grooves, was pierced with holes $1\frac{1}{2}$ inches apart; two weights were attached to strings fastened one to each end of the card. The weight attached to one string was slightly lighter than that attached to the other, but both were of fair weight. The former string passed over a runner, and the latter over a pulley attached

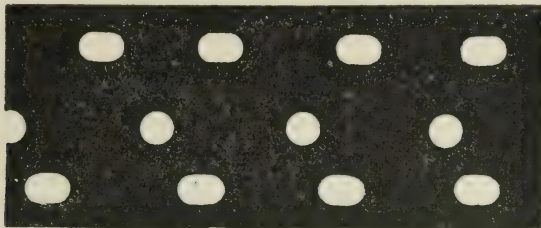


FIG. 1.—Top row, key shutter. Middle row, holes at rest. Bottom row, Hawkins' shutter.

to a drum, which was eventually worked by an electro-motor, though originally turned by hand at a given speed. The drum was first got to an uniform speed which could be altered at will, and, when this had been obtained, the latter string was made to bite on the pulley connected with it by releasing the weight, and the card traveled across an illuminated field. It was easy with the speed required to give an exposure while the card was passing in front of the lens. The images of the holes were, of course, impressed on the plate, but, to make the measures complete, the holes were photographed on the same plate when the card was motionless. This gave a scale to the photograph, and enabled it to be seen what length of time elapsed between the exposures of the different sections of the plate. Fig. 1 will give an idea of what was obtained. One set of oval-shaped holes is due to an exposure with the shutter in

question, and the other with the Key camera shutter which works at the diaphragm. The former shows that the different sections of the plate were exposed at different times, and the latter that the plate was exposed all over at the same period, since the intervals between the images of the moving holes and of the holes at rest are equidistant. I may here mention that a very convenient means of ascertaining the number of revolutions a drum makes when they do not exceed four or five per second, is by counting. If a small particle of sealing wax be attached to one edge of the drum, and a strip of quill be held in such a position that the former just touches the latter each revolution, a distant click will be heard. A more scientific way is to attach a disc pierced with, say, sixty holes, along a circle near the circumference, and make a siren of it by blowing through the holes with a small tube. The musical note given out can be readily registered by a pitch pipe, or by a mouth organ, and thus the number of revolutions be known. These little details are given, as they have proved difficulties in the course of the experiments, and I should like to save trouble to those who repeat them.

I give some speeds obtained in this way :

| 5 $\frac{1}{2}$ -INCH FOCAL LENGTH. CENTER OF PLATE. | Second. | Stop. |
|---|----------------|-------|
| Key shutter..... | $\frac{1}{42}$ | — |
| Hawkins' shutter ($\frac{1}{2}$ -plate)..... | $\frac{1}{22}$ | f/16 |
| Tylar shutter..... | $\frac{1}{98}$ | f/16 |
| Thornton & Pickard..... | $\frac{1}{91}$ | f/16 |
| Drop shutter..... | $\frac{1}{32}$ | f/16 |

(To be continued.)

[From Photographische Correspondenz.]

DEVELOPMENT OF WEAKLY PRINTED POSITIVES ON GLASS AND OPAL.

BY E. VALENTA.

REFERRING to the development of insufficiently printed proofs on celloidin, Obernetter, Aristo, Mignon, and similarly prepared papers, as reported in our last number, further experiments have been made by the author with a view to developing glass positives and opals on plates coated with printing-out emulsion.

The experiments were made on "chlor-silber-gelatineplatten zum Auscopiren" by Schattera, of Vienna.

The plates were copied sufficiently only to show a faint impression—a mere, but distinct, outline—and then developed by means of an acid hydroquinone, or pyro developer.

As these plates are not in any way liable to fog, and will stand a comparatively energetic treatment, the developer had consequently to be modified.

For red and violet tones the following hydroquinone developers are strongly recommended :

| | I. | II. | III. |
|------------------------|-----------|-----------|-----------|
| Hydroquinone | 15 parts. | 15 parts. | 15 parts. |
| Sulphite of soda | 50 " | 50 " | 50 " |
| Citric acid..... | 3 " | — | — |
| Acetic acid..... | — | 5 " | — |
| Tartaric acid..... | — | — | 5 " |
| Water | 1,000 " | 1,000 " | 1,000 " |

These developers result in clear, colorless solutions, which will keep in good condition for a long time. They are best used at a temperature of 68 to 77 degrees Fahr. If the temperature is too low, development will take place but slowly. The plates are exposed in diffused daylight not longer than from five to fifteen minutes. During

development the tray has to be kept rocking. The combined toning and fixing bath is that recommended in my last contribution, but diluted with equal parts of water.

For the production of yellowish-red tones, which are very effective with glass positives, the developed and washed picture is fixed in a neutral 12 per cent. solution of hypo, and is then transferred to the combined toning and fixing bath until it assumes a slightly reddish tone, when it is at once withdrawn and washed for some hours in running water.

Sepia brown tones are obtained with—

| | |
|---|------------|
| Hypo..... | 100 parts. |
| Acetate of ammonium..... | 100 “ |
| One per cent. solution of chloride of gold..... | 30 “ |
| Water..... | 1,000 “ |

By another method red tones are produced by fixing the developed plate in a neutral fixing solution and transferring the same to the toning bath recommended by Eder and Pizzighelli, to which for each 1,000 parts of solution half a part of phosphate of soda has been added. The picture will quickly take a peculiar yellow-red tone, which, on drying, changes to a beautiful, brilliant red.

Violet, purple-violet, and blue-black tones are obtained by longer or shorter immersion in the combined toning and fixing baths,

The hydroquinone developer No. I can be used for several plates in succession, and such already used solutions act at once as developer and intensifier, owing to the considerable quantity of silver salts which they dissolve out of the coating of the plates. After standing for some time, the silver will be reduced to the metallic state, and the solution will turn muddy; warmed on the water or sand-bath, the sediment will, however, soon settle, and, after filtering, the developer may be used afresh.

Developers Nos. II and III work somewhat differently and develop quicker, giving at the same time purplish-violet tones, which in the neutral fixing bath are, however, lost. If these developed and well-washed plates are fixed in a weak solution of hypo and ammonia, or a mixture of ammonium and carbonate of ammonium (10 per cent. solution), they will, after washing and drying, show a splendid ruby color, which cannot be obtained by developer No. I.

The fixed positives have in all cases to be well washed in running water, or they will, after some time, show yellow whites.

Developers with pyrogallic acid work still quicker, and by their means dark violet and black tones are easier to obtain. The developer best suiting these plates consists of—

| | |
|-----------------------|-----------|
| Pyrogallic acid..... | 20 parts. |
| Citric acid..... | 16 “ |
| Sulphite of soda..... | 50 “ |
| Water..... | 1,000 “ |

It will develop vigorously and richly, giving the positives a brown color, which afterwards, in the combined toning and fixing bath, changes to a violet bluish-black, and black tone. It is also best suited to plates showing, to commence with, a very faint impression only, as by its employment all harshness is avoided.

To the practical photographer this process offers many advantages; it makes him practically independent as regards duration of exposure. Under or over-exposure will no longer trouble him; from ten to fifteen minutes' exposure to diffused daylight will in all cases be sufficient to obtain an impression, which can be easily and reliably developed in a good picture.

A further and very definite advantage consists in the absolute absence of grain, which will make this method especially adapted to the production of enlarged glass positives, the color of which can be had at will from a red to a violet and black tone.

It is equally well suited to the production of lantern slides by contact printing; and last, but not least, all operations may be carried out in gas, lamp, or subdued daylight.

OUR ILLUSTRATION.

"A Good Hand" is an admirable title for the fine illustration which we present to our readers in this issue. The negative is by Mr. John E. Dumont, and the strong lighting of the face makes it stand out in marked contrast to the sombre background, giving an expression of relief seldom obtained in so marked and successful a manner. The composition of the picture is admirable, and the expression perfect. If history does not belie them, the reverend fathers of earlier days were fond of a little game now and then, and we doubt not that the expression of satisfaction upon the face of the subject of our illustration is a faithful reproduction of what has often been seen in some of the mediæval monasteries.

THE INTERNATIONAL ANNUAL, 1892.

THIS well-known annual is now ready. Many improvements are to be observed in its make-up. In deference to the wishes of many friends, it now contains an excellent photographic almanac as well as a compact calendar for 1893. There are over three hundred and fifty pages of solid reading matter, written by one hundred and fifty-seven contributors; a large number of the more important developing formulas; a most complete list of American and foreign photographic societies, revised to date; a darkroom list for America, England, Ireland, Scotland, Wales and France, which will prove useful to tourists, and a greatly extended list of tables that will prove serviceable to professional and amateur photographers as well as to dry-plate makers and photographic manufacturers. In fact, it is the most complete ready-reference book ever presented to the photographic fraternity. No progressive worker in the art can afford to be without this volume of five hundred odd pages at his elbow for consultation, while its usual wealth of illustrations are alone worth the money paid for it, as examples of artistic photography.

LIST OF PREMIUMS AWARDED AT THE 61ST EXHIBITION OF THE AMERICAN INSTITUTE, DECEMBER 10, 1892.

Group 3.—Frank Pearsall, 253 Fulton street, Brooklyn, N. Y., for Knarfo-graphs, Medal of Taste; C. D. Fredricks, 770 Broadway, for Photographs, Plain and in Crayon, Pastel and Water-Colors, Medal of Superiority; Geo. G. Rockwood, 1440 Broadway, for Photographs, Medal of Superiority; Rudolph Wilhelm, 624 Madison avenue, for Crayon Portraits, Water-Colors, Pastels and Photographs, Medal of Superiority; J. B. DeYoung, 815 Broadway, for Crayons, Pastels, Oil Portraits and Photographs, Medal of Superiority; Geo. H. Chase & Co., 201 Thames street, Newport, R. I., for "Iota" Celluloid Films and Transparencies made on same, Medal of Superiority; A. Tanquerey, 63 and 65 West 14th street, for Crayon Portraits, Pastel Portraits and Photographs, Medal of Merit; Mrs. W. A. Robinson, 2320 Third Avenue, for Photographs, Medal of Merit.

Group 7.—The Scovill & Adams Co., 423 Broome street, for Photographic Apparatus and Materials, Special Medal; E. & H. T. Anthony & Co., 591 Broadway, for Photographic Materials, Medal of Superiority.

while it was being developed, Mr. Mencarini, the honorary secretary, read the following paper :

A PRACTICAL DEMONSTRATION ON LANTERN-SLIDE MAKING.

"Members of the Foochow Camera Club, Ladies and Gentlemen : I must confess that after having offered to give you this practical demonstration on lantern-slide making, I realized the difficulties I had to contend with, feeling I undertook a task much beyond my power.

"I will, though, try to be as brief as possible, craving your indulgence if I do not fulfill all the expectations you may have had on coming here to-night.

"Lantern shows, or, as commonly called, 'Magic Lantern Exhibitions,' have become so very popular, that I thought a demonstration of how these entertainments were made would be interesting to you. I have therefore come forward not as an inventor of some 'Mencarini Patent,' but simply as a narrator of what I have learnt myself of this fascinating pastime from books, periodicals and a little experience.

"We all remember our younger days when to be taken by our parents to a 'Magic Lantern show' was as great a treat as to be given a piece of 'butter-scotch.' How many times have we gazed delighted on those large pictures, shown us on a white sheet, and wondered how they were done, and what a respectful admiration we had for that man who could show us such wonderful things. Well, now, any one, with but little work, can produce those 'magic pictures.'

"Great are the advantages of 'lantern shows'; it delights and instructs the juveniles more than at first thought would seem. And so much am I convinced that it does instruct, that, if I should have it in my power, I should make it compulsory for every schoolmaster to have a magic lantern, and give at least once a week an exhibition, showing some of the superior slides which can be purchased on any subject required at a very small cost. By further explaining the subjects, geography, natural history, astronomy, etc., could be taught, and be impressed more on young minds than by hours of pondering over books, which in many cases are not understood and which are repeated as by parrots.

"Very much has certainly been done in this line, scientists and public speakers have been convinced of the enormous advantages there are in using the lantern to illustrate

their papers. What would require a long explanation, and then would not convey to the mind a perfect idea of the subject, with the aid of a magic lantern and a photographic lantern slide, can be shown to a large audience one hundred times larger than Nature and with all its details.

"Photography has been rendered so very simple that I cannot understand how every man or woman having a spare moment does not make his own pictures. How many are the occasions when, if you had been able to take a photograph, you would have pictures of places dear to you, and which are bound to bring agreeable recollections in days to come.

"For a comparatively small sum you can purchase an outfit, and surely you can always find a kind friend who could explain the mysteries of this most entertaining and useful of pastimes, and I can assure you, that although it is many years since I dedicated my spare moments to photography, still, I find there is such a fascination when watching the exposed plate being developed, especially if the negative has been correctly exposed, and the development proceeds gradually, and the result is a good, brilliant negative, that I know not how to express the intense satisfaction it produces.

"But I observe I have deviated considerably from the object of my theme. I shall now come to the point.

Of course, the principal thing you must have for slide making is a good negative. This can be of any size desired, but should be, to give good results, clear, crisp and full of details.

There are two ways to produce lantern slides, one is by contact, that is the film side of your negative and the film side of the lantern plate are placed back to back in a printing frame and exposed either to day or lamp light. Usually for this kind of work the negatives are on quarter plates, but I have seen lantern slides made from other sized plates when only part of the negative was required.

The other way is the most used, and this is by reduction with a copying camera. Better results are obtained in this way.

Most complicated and expensive apparatus are catalogued by home manufacturers, but, as you may see to night, my only appliance is simplicity itself. A board 4 feet long by 12 inches wide, to this is screwed on perpendicularly another board 18 inches high, which has an aperture large enough to hold a negative. Opposite this I place the same camera I usually take my photographs with.

Having determined on the focusing screen

the proper distance between the negative and the lens, I firmly screw the camera on the board, marking the place, and so I am saved the trouble of readjusting the camera every time it is required.

I prefer doing my slides in the evening when I am at leisure. The plates I use are dry plates. Wet collodion lantern plates are preferred by some and certainly they possess their charms, but dry plates have the advantage of being ready prepared, economizing much time and are so cheap, one shilling a box of a dozen plates, that I do not think it worth while messing about, as in old days with collodion, silver baths, etc.

The exposure varies, of course, according to the density of the negative, the light, etc., but the average exposure is about two minutes by lamplight.

To develop, any of the recognized formulas can be used, my advice being to use the developer specially recommended on the box by the maker.

After developing and washing, a few minutes in an alum solution hardens the film and clears somewhat the high lights. Do not make the hypo bath too strong and wash finally for about half an hour.

The slides can be finished by toning with either gold, platinum or uranium nitrate, but this is not necessary if the exposure and development are correct. Clouds are printed in while exposure is carried on, but are very difficult to work. When the plate is dry it is mounted with a cover glass, placing a lantern mask between the two glasses, and binding them together with specially prepared lantern slide binding strips.

The magic lantern, or, as it is more pompously called, "The Optical Lantern," can be lighted either with kerosene oil, oxy-hydrogen limelight, or by the new Aëro carbon incandescent lamp. The picture is better shown on a white wall, but fairly good results can be shown through a thin shirting screen, as I shall presently do myself, showing you first practically how to make a lantern slide, with the flash-light picture made by our esteemed Vice-President, Mr. Rentzsch, to-night, and then, after exposing the resulting slide through my lantern, I shall follow on with other slides, some of my own making, others purchased from home makers.

I will conclude by advising you to try photography and lantern-slide making, and you will, I have no doubt, experience the same enthusiasm, as I have, for this entertaining and useful occupation."

Meanwhile the flash-light plate had been developed into a good negative, which was reduced on the stage, Mr. Mencarini explaining the process. Refreshments were supplied to the ladies during the ten minutes interval it took to develop the lantern slide. A fair picture was then exhibited on the screen, showing the audience their own photos. Some other slides of Mr. Mencarini's were also shown, followed by several from home makers.

Mr. S. L. Gracey then rose and in a very able speech proposed a vote of thanks to the Hon. Secretary and the others who had contributed to the evening's entertainment.

THE PHOTOGRAPHIC SOCIETY OF JAPAN.

THE regular monthly meeting of the above-mentioned society was held on Friday, November 4th, at the rooms of the Geographical Society (Chigakukio Kai) Nishikonyacho, Kyobashi, Tokyo. Work done by Messrs. C. D. West and W. K. Burton during the summer vacation was on exhibition.

The regular meeting began at 5 P.M., Mr. G. Gilbert in the chair. The following gentlemen were unanimously elected members of the Society: Messrs. A. B. Brown, J. B. M. Barrett, P. C. E. Choissonné and T. Kiyokawa, Drs. E. Scriber and Augustus Wood.

Mr. J. Tanaka showed some results of experiments in collotype. They were not quite perfect, but were remarkable as the results of first attempts in this difficult branch of photo-mechanical work, the more especially as Mr. Tanaka had worked entirely from written instructions. After trying various more or less complicated formula, he had settled on the following:

| | |
|---------------------|----------|
| Bichromate of ammo- | |
| nium..... | 1 gram. |
| Pure gelatine..... | 6 grams. |
| Water..... | 20 c.c. |

He had found an admixture of isinglass, even in small quantities, the reverse of an advantage.

Messrs. W. K. Burton and K. Arito showed the results of experiments in orthochromatic work. They had set themselves the task of getting photographs showing a brilliant *pure* scarlet, a bright but darkish blue, and a pure chrome yellow, in their true value. If these could be shown truly all other colors could. They had succeeded best with a mixture of eosine and cyanine. Eosine was a strong sensitizer for the yellow and the green cyanine

for the red and the orange. The following formula was used:

| | |
|-----------------------------|----------|
| Cyanine solution, 1 part in | |
| 1,000..... | 1 part. |
| Eosine solution, 1 part in | |
| 1,000..... | 1 " |
| Ammonia, 10 per cent. | |
| solution | 4 parts. |
| Water (distilled)..... | 14 " |

The plates were bathed for two minutes and dried. Of course, such plates need the extreme care in working.

A yellow screen was used with plate glass sides, inclosing $\frac{1}{4}$ -inch thickness of the following solution:

| | |
|------------------|------------|
| Picric acid..... | 1 part. |
| Water | 500 parts. |

The intense but very light yellow color of a picric acid solution seemed particularly well suited to orthochromatization. With a denser solution than that mentioned it was possible to overdo the orthochromatization. The exposure needed was ten times that with the same plate untreated, but without any yellow screen.

Mr. J. Favre-Brandt sent a most interesting paper on "Pin-hole Photography" (photography without a lens), along with the samples of the work done, and of the pin-holes used. It was agreed that these samples were remarkably good. In fact, in some respects they were better than photographs taken with a lens, showing a pleasing softness. The exposures had been from one to about five minutes. The unusual excellence of these results was probably due to the great care with which the pin-holes were prepared. They were in thin plates of nickel, were perfectly circular, in each case of the exact diameter that would give the finest definition with the focal length used, and the edges were delicately beveled.

Mr. Kajima Sebi showed a hand camera in the form of an opera-glass. The arrangement on the whole was ingenious, but samples of work done by the camera were much under-exposed. The lens working at about $f/16$ was far too slow for this kind of work, especially as the shutter was one that gave a bad co-efficient of light. Further, there was no means of adjusting the focus.

Mr. T. Kiyokawa presented the Society with a bottle of "Retouching Solution." This was to be applied to the plates while still wet, after fixing and washing. It was evidently an aqueous solution. Mr. J. Tanaka was asked to take the bottle with him, to try the solutions, and to report to the next meeting.

AMERICAN INSTITUTE—PHOTOGRAPHIC SECTION.

A REGULAR meeting of the Photographic Section was held in the Lecture Room of the Institute, 115 West 38th street, New York City, on Tuesday evening, December 6th, Henry J. Newton, President, in the Chair.

Mr. O. G. Mason, Secretary, acknowledged photographic publications received, and stated that Miss Catherine Barnes would give the story of her travels during the summer in southern England, with illustrations, at the January meeting of the Section. Miss Barnes made about one thousand five hundred negatives during her trip abroad.

Mr. Harrison exhibited a bromide print, explaining how it was made, and also a neat frame for small pictures.

The Vice-President, C. Van Brunt, was called to the Chair, and Mr. Newton, before reading his article on "The Lantern Slide and Its Relation to Art," remarked that he had made his paper very brief; he had intended to tell how he produced the slides, but he found that would take too much time.

Mr. Newton, at the conclusion of his paper (see next issue of BULLETIN), said he had a number of lantern slides to exhibit, that they were mainly made from scenes around his country home at Nyack, on the Hudson, and, perhaps, they would show it was not necessary to go all over creation to find pictures. The thing we needed to learn was to know a picture when we saw it. Many excellent and beautiful pictures were then thrown upon the screen, Mr. Newton describing them in an easy, entertaining manner.

Mr. Van Brunt exhibited a few pictures developed with amidol—illustrating how to produce white and black.

Mr. NEWTON—If there is any one present who wants to ask any questions, or make any remarks, we shall be very happy to hear what may be said.

Mr. J. WELLS CHAMPNEY—I am very pleased to say that I consider your exhibitions here are very artistic. I have very little to say excepting "Amen" to your theories, and the results you have shown. I wish to capture for myself one of the slides.

Mr. NEWTON—You can have as many as you want of them.

Mr. CHAMPNEY—It is not only a question of the gratification we have in looking, but it leads to the optical truth of seeing; that is to say, it represents something that artists have seen and studied for, that photographers have not. I thank you for the privilege of express-

ing my gratification and pleasure on this occasion.

Mr. NEWTON—As Mr. Champney is one of our most distinguished artists, I appreciate the remarks coming from him, more than I would if he were not an artist. It is something that photography has never studied for; that is just it. This state of things comes from photography and not from art, as I represented it in my paper. I think all artists will agree with my position as being unsatisfactory. I can demonstrate its truth.

A Member—I suppose it was taken from dry-plate negatives?

Mr. NEWTON—All dry plates; nothing wet about it. At some other time I will tell you how I produce lantern slides according to the heterodox notions.

Mr. W. E. PARTRIDGE—There is an old saying that comes down from theology that orthodoxy is my doxy, and heterodoxy is your doxy. I am afraid the other fellows, who have been in the majority, have been talking too much orthodoxy about the ways of making slides and the plates they ought to be made. I think if a good many of them could have been here to-night they would have become of our doxy—would not have been so heterodox. There is one more theological point I want to make. I think one of the best sermons I ever heard in my life was upon the Lord's Prayer. The preacher, after taking up the various petitions in it, and showing how they had been answered, came to the one, "Give us this day our daily bread," and stopped suddenly, and with much emotion said: "Brethren, it seems to me for the rest of your lives you had better stop using that, and instead of saying, 'Give us this day our daily bread,' pray, 'teach us to know our daily bread when we see it.'" Now, that is what is the matter with amateur photographers, as well as the rest of the world, they don't know their daily bread when they see it; don't always know a good slide when they see it; don't know a good picture when they see it; don't know when they have got into the best position. They need to put up a petition to the artistic prayer answerer to teach them to know their daily bread. I say this in all honesty, that more than the average number of landscapes made by the amateur photographers are superior to the landscapes made by professionals. In going about the country and looking at professional work there is very little of the professional that comes up to what we would consider decent amateur landscape work.

Mr. BECKER—I used to be a daguerreotypist. I would say something in favor of the inventor of the lantern slide. You say the old photographers had no idea what was wanting in producing atmosphere. They tried to obtain it, but the process was too inferior in those days to get what they wanted. Langheim made a picture of Niagara Falls, the first one ever made, that is, to get the water perfectly and the trees on Goat Island. He had some twenty-six or twenty-eight gold medals which he obtained in Europe from noble families there. That shows he had some taste. I consider it due to my old teacher and partner to say something in his favor, because he was the inventor of the slides. It is said that necessity is the mother of invention. So it was with this photographer in the making of lantern slides. Langheim went from here to Europe and took some of his daguerreotypes along with him. They caused such an effect there that several came from Europe here to learn the art.

A Member—How did he make his first slide?

Mr. NEWTON—By the old French process of Ferrier, which was the albumen process.

A Member—That was after the collodion process was introduced?

Mr. NEWTON—I think it was before the collodion process was introduced. Levy succeeded Ferrier. Ferrier was the first who made those beautiful positives on glass. I have many of his slides.

President Newton was heartily applauded, and the unanimous verdict seemed to be that he had struck a blow in the direction of a long-needed reform, and the slides he exhibited fully justified and fortified his position.

SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

ALTHOUGH Tuesday evening, December 13th, was as miserable a night as it is possible to conceive, there was a large attendance at the regular monthly meeting of the above society. Mr. R. DAYTON, the President of the society, occupied the chair, and announced that the routine business would be dispensed with until later in the evening, and the scientific business at once taken up. He then introduced Mr. Alexander Black, who read a paper on "Photography in Relation to Art."

Among the audience were several well-known artists who testified repeatedly to their keen appreciation of the points made by Mr. Black. An invitation to attend had been ex-

tended to the Photographic Section of the American Institute, and there were many present who had listened to Mr. Newton's paper on "The Lantern Slide and Its Relation to Art."

Mr. Black commenced his argument by stating that though definitions of art may be different, art is not so different as its definitions. Art has steadily kept ahead of definitions. Theories have followed art, not art the theories. Art is the expression of ideas, and the facility of expression is limited by the means of expression. Proceeding, he said that art is, then, an artist's impression of Nature. Great art is always prophetic. It makes rules and it breaks rules. Taking a forest as a subject, he showed how it might be translated by different artists, some seeing the solemnity, others the mystery, others the magnitude, and so on, each in his representation striving to make his canvas give out his impression. In all instances, the camera's report would be the same.

The lights being turned out, a large selection of slides was exhibited. A picture of a hall in the Luxembourg palace was shown. This was a simple reflection of the hall. The skill evidenced here was a scientific skill. This is essential as a foundation. Efficiency is the beginning of success. But the scientific road is strewn with difficulties. (A slide showing two horses with backs of enormous length amply illustrated this.) Mr. Black then proceeded to discuss the advantages of photography from a scientific point of view, slides showing the night-blooming cereus, underground tunneling and animals being shown as faithful copies of the originals. The immense value of photography in bringing from inaccessible places counterfeits of various forms of art was illustrated by copies of old masters and sculptures. Its value, too, in giving an absolutely correct delineation of every movement was demonstrated in a picture of a seaman heaving the lead. Its value as a corrector of false impressions was splendidly illustrated by a slide showing several lightning flashes. Seascapes and cloud pictures followed and then a series of charming studies from life, little groups of children at play, picturesque bits by the rivers and character sketches, all tending to enhance the value of photography in the eyes of the artist.

Mr. Black, beyond doubt, made out a capital case for photography, and his hints as to where the photographer may attempt to improve his work will not be forgotten by those present.

A hearty vote of thanks was accorded to Mr. Black and unanimously carried by an audience who had followed every word with the closest attention.

TUNBRIDGE WELLS EXHIBITION.

THE sixth annual exhibition of the Tunbridge Wells Amateur Photographic Association was held in the Great Hall, on Wednesday, Thursday and Friday, the 23d, 24th, 25th ult. In the absence of Sir David Salomons, who was to have opened the exhibition, this pleasing duty devolved upon the Rev. A. T. Scott. The exhibition attracted some of our leading workers, and we need hardly say that among the exhibitors are found the names of Mr. H. P. Robinson and Mr. Ralph Robinson, the former of whom is a resident of Tunbridge Wells. The hall was lighted by electricity—an advantage which, as yet, few exhibitions of photographs have been able to secure—and the whole enterprise, carried out under the masterly management of the honorary secretary, Mr. J. Chamberlain, must be regarded as a great success. About eight hundred frames were hung—a very large number for a provincial exhibition—and there was a fair show of apparatus by Messrs. Watson & Sons, the Blackfriars Photographic and Sensitising Company; Messrs. Taylor, Taylor & Hobson, Mr. J. K. Gotz, the Paget Prize Plate Company, and other manufacturers and dealers.

JUDGES' AWARDS.

We beg to state that, having given careful consideration to the exhibits in the above exhibition, our decisions are as follows:

In the classes given below, while withholding all awards of medals, on the ground of insufficient merit, we are pleased to mention the following as the best in our opinion in each class:

Class I, No. 13, "Entrance Great Mosque." Class II, no award or mention. Class III, No. 44, "Breakers." Class IV, no award or mention. Class V, Lantern Slides, no award or mention. Class VI, Transparencies, no award or mention. Class VII, Scientific, no award or mention. Class VIII, no award or mention. Class IX, Nos. 224 to 227. Class X, No. 358, "Waiting for the Boats." Class XI, No. 314, "Shade." Class XV, no award or mention. Class XVI, No. 578, "Washing Day, Normandy."

In the remaining classes the awards are as follows:

Class XII, No. 345, "The Gray Dawn," Silver Medal. No. 399, "Fenlands," Silver Medal. No. 372, "The Peasmarsh after Sunset," Honorable Mention. Class XIII, Genre, No. 418, "Ah!" Silver Medal. No. 412, "All's Fair in Love or War," Bronze Medal. No. 414, "Worn Out," Honorable Mention. Class XIV, Lantern Slides, Nos. 499-504, Silver Medal. Nos. 463-468, Silver Medal. Class XVII, Genre, No. 607, "A New Pet," Silver Medal. Nos. 591-595, "The Naver Ceremony," Honorable Mention. Class XVIII, Nos. 664A-669A, Bronze Medal. Class XIX, Portraits, No. 690, "Sir F. Leighton," Silver Medal. Class XX, Enlargements, No. 735, "Kew Gardens," Silver Medal. Apparatus, no award.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. Correspondents will please remember this. No attention will be paid to anonymous communications.

Q.—R. M. D. writes : Please advise if you know of a metal called Selenium and what is the price of same?

A.—We do. It is quoted by Messrs. Eimer & Amend, of this city, at \$2.50 per ounce, and you can readily obtain it from them if you so desire.

Q.—L. S. writes : 1. Will you please inform me through your paper (the BULLETIN) what formula to use to keep a wooden tray from leaking? 2. What kind of a tray is the best to use for hypo in the darkroom (for plates)? 3. What is the cause that some negatives print much darker pictures than others. Is it because there is too much light when exposed or not enough? Please answer the questions in your BULLETIN as soon as possible.

A.—1. A good way is to line it with a piece of rubber cloth, folded to fit the corners, so that there will be no seams. 2. We prefer a hard rubber or porcelain bath with vertical grooves for this purpose. 3. We do not exactly understand your question. Some negatives are much more dense than others, and require much longer to print, *e. g.*, for the sun to get through the negative and affect the paper.

Q.—D. L. P. writes : Will you please be kind enough to answer these questions in your BULLETIN : What is the best thing to clean a tarnished lens with? Give the best formula you know of for making an hypo eliminator? Do you know of any publication that explains how they print pictures that are taken on several negatives in section and join them, so that the finished print looks like one continuous picture.

A.—Your first question is not quite plain. Do you mean the mount or the glass? A brass mount may be cleaned with Putz-pomade, Tripoline, or any one of a dozen good metal polishes that are on the market. If the glass has become clouded through age it is impossible to do anything with it. Grease spots or finger marks may be removed by breathing upon the glass and then rubbing it off with a

clean, soft chamois skin. We know of no better hypo-eliminator than a thorough washing. A few drops of hydrochloric acid added to the last wash water is frequently used. We know of no publication of this kind.

Q.—N. P. A. writes : Is carbonate or bi-carbonate of soda, or either, the right thing to keep a silver bath pure and neutral, and is the soda alone, when followed by "sunning," sufficient, or should hydrochloric acid be first added? What sensitizing and toning baths, or other treatment, is recommended to get best results with N. P. A. paper?

A.—Either carbonate or bi-carbonate of soda will answer your purpose, but we would recommend a little finely pulverized permanganate of potash instead of the hydrochloric acid, much of which would destroy your bath. Use any ordinary, good silver or toning bath to which you are accustomed.

Q.—T. & W. write : Will you please give me formula for making platinotype solar enlargement. I wish to make them thus : 1st. Coat the paper. 2d. Put it upon easel wet. 3d. Expose, but have no image appear. 4th. Develop it and bring out image. 5th. Wash off and put in fixing bath. 6th. Final wash; and is the paper used just plain crayon paper, or is it sensitized before it is coated? Let me hear as soon as possible.

A.—We know of no existing method that will satisfy all your conditions, especially Nos. 2 and 3. The paper used for the purpose of making platinum solar enlargements is ordinary crayon paper which has not been previously sensitized.

Q.—J. J. P. P. writes : 1. Please explain what is meant by the term "Developing Aristo Paper," and how it is done? 2. What means cockling of prints? If it means curling after mounting, please give formula for good non-cockling paste for American aristo and other papers. 3. What means the word genre in making photos, as genre work, etc.? 4. What is meant by "plain" paper, and what by "salted" paper? 5. What are solar prints? 6. Does age reduce intensity in negatives? 7. I have a number of spoiled negatives, and wish to use the glass plates for other purposes; how can I strip the films off without scratching the glass? 8. About two years ago I read somewhere of a method of enlarging pictures by taking a negative and stripping the film by some chemical process; the film is then lifted on to another glass plate, where it is left to dry, and is then several sizes larger than it was on the old plate. What are the chemicals used and how is it

done? 9. What are diapositives? 10. What is "Farmer's solution," mentioned by Mr. Ives, at the meeting of the Philadelphia Photographic Society (reported in the BULLETIN of November 12th), for reducing parts of a negative? 11. What kind of paste is used for mounting American Aristo prints for illustrations in the BULLETIN? I notice that the mount is almost always flat and does not seem to have curled much, or does the print have to be kept under heavy pressure after mounting? 12. I think I have read that bromide in the developer prevents fogging of plates; what kind of bromide is used? Please give full name of chemicals.

A.—1. To develop Aristo paper, give a short exposure under a negative, and then place in a tray and develop in the usual manner, as applied to a negative, with hydroquinone, wash and then tone and fix in the ordinary way. 2. "Cockling" means curling. It can be partly remedied in burnishing or by allowing the mounted prints to dry under pressure of a flat surface. 3. The term *genre* is applied to pictures in which a motive or an idea is carried out, such as illustrating certain scenes of every-day life. 4. "Plain" paper is paper which has not been albumenized. "Salted" paper is paper which has been saturated with a salt solution. Solar prints are practically enlargements made with sunlight upon silver paper. 6. If thoroughly washed. 7. Immerse them in a strong solution of caustic soda or hot water. 8. We know of no such process. 9. Positives. 10. Farmer's solution is a mixture of hyposul-

phite of soda and ferri-cyanide of potassium, viz.:

Ferri-cyanide of Potassium... 1 ounce.
Water.....16 "
Hyposulphite of Soda..... 1 "
Water.....16 "

Immerse the negative in sufficient hypo solution to cover it and add a few drops of the ferri-cyanide solution. 11. There is nothing better than good, freshly made starch paste. 12. Bromide of potassium.

Views Caught with the Drop Shutter.

A COMPANY, to be known as the TISDELL MANUFACTURING COMPANY, is about to be incorporated in Scranton, Pa. The charter members are H. C. Stillwell, L. B. Stillwell, F. W. Stillwell, G. B. Foster, H. B. Foster, W. B. Henwood and C. W. Gunster. It is expected that they will commence operations in January in the Lawler building on Spring street, where they will be located during the first year of their existence.

Mr. F. H. LEE, of Ansonia, Connecticut, has recently had the misfortune to lose his son, who had recently shipped for a cruise on a new vessel commanded by a friend of the family's. Shortly before sailing, he was missing and a search revealed his lifeless body in the hold of the ship. As it had been raining and the deck was slippery, it is surmised that he must have slipped and fallen down the hatch, which was open. The blow is a severe one to the family and we would extend to them our hearty sympathy.

TABLE OF CONTENTS.

| | PAGE | | PAGE |
|---|------|--|------|
| A NEGATIVE EXPERIENCE, by <i>Adelaide Skeel</i> | 746 | SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK..... | 765 |
| AMERICAN INSTITUTE—PHOTOGRAPHIC SECTION..... | 764 | SPEED AND EFFICIENCY OF SHUTTERS, by <i>Capt. W. De W. Abney, C. B., R. E., H. R. S.</i> | 755 |
| DEVELOPMENT OF WEAKLY PRINTED POSITIVES ON GLASS AND OPAL, by <i>E. Valenta</i> | 758 | THE FOOCROW CAMERA CLUB..... | 761 |
| EDITORIAL NOTES..... | 739 | THE INTERNATIONAL ANNUAL, 1892.... | 760 |
| HINTS ON PHOTO-ENGRAVING, by " <i>Cuprous</i> "..... | 749 | THE PHOTOGRAPHIC SOCIETY OF JAPAN..... | 763 |
| LAST YEAR'S RECORD.—THE "BULLETIN'S" PLANS FOR 1893..... | 738 | THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA..... | 761 |
| LETTER FROM FRANCE, by <i>Léon Vidal</i> .. | 742 | THE VALUE OF FOG, by <i>S. R. Stoddard, of Glens Falls</i> | 753 |
| LIST OF PREMIUMS AWARDED AT THE 61ST EXHIBITION OF THE AMERICAN INSTITUTE, DECEMBER 10, 1892..... | 760 | TUNBRIDGE WELLS EXHIBITION..... | 766 |
| OUR ILLUSTRATION..... | 760 | VALEDICTORY..... | 737 |
| SNOW PICTURES, by <i>Rev. F. C. Lambert, M. A.</i> | 750 | VIEWS CAUGHT WITH THE DROP SHUTTER..... | 768 |
| | | WHAT OUR FRIENDS WOULD LIKE TO KNOW..... | 767 |

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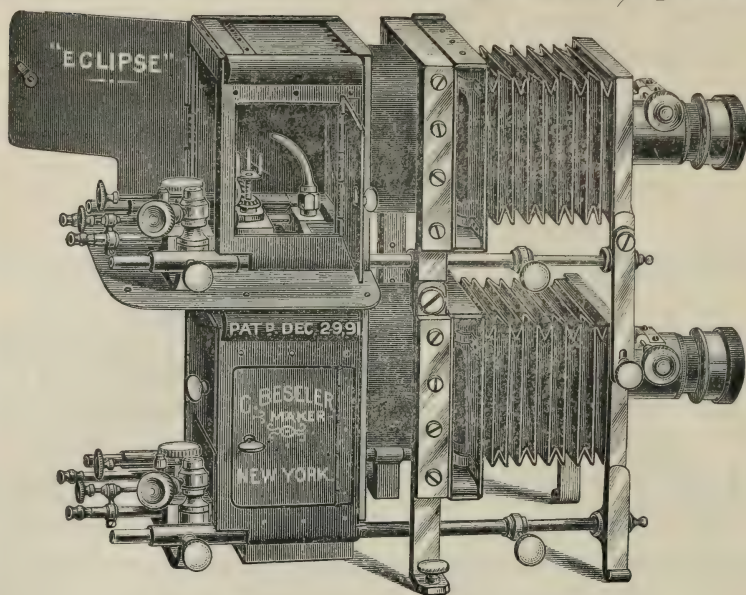
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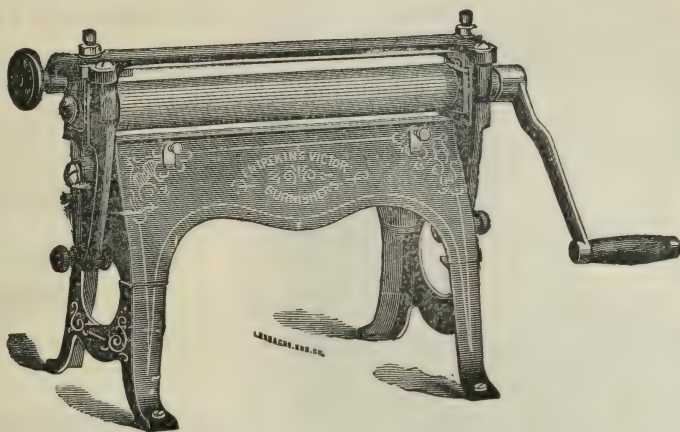
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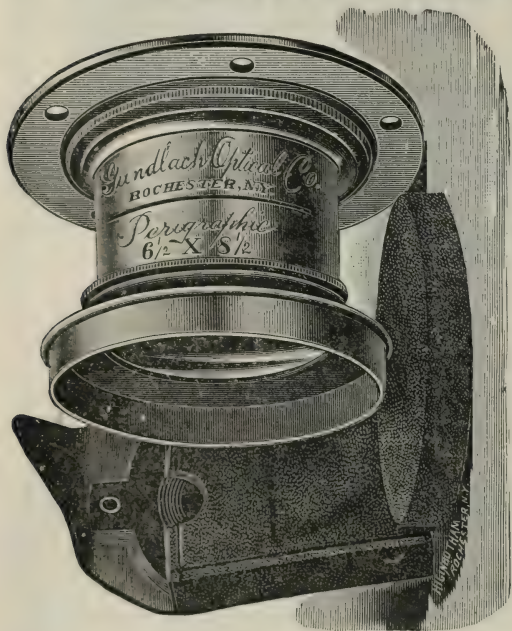
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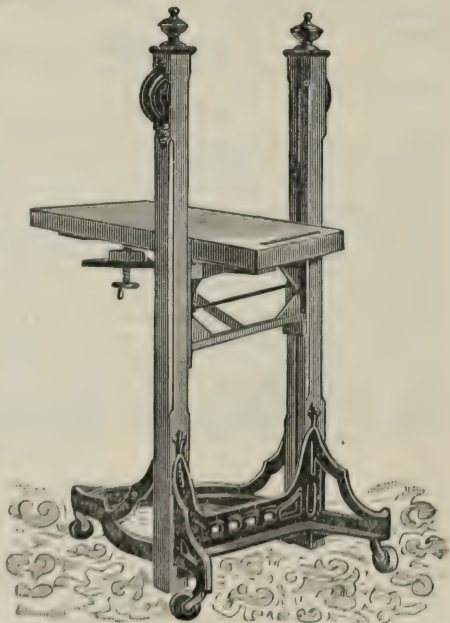
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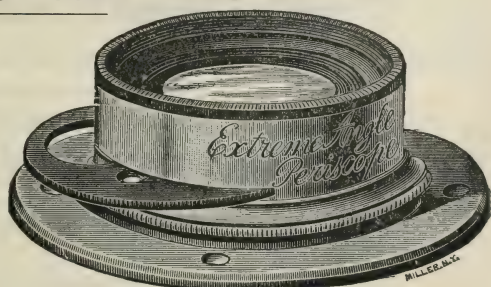
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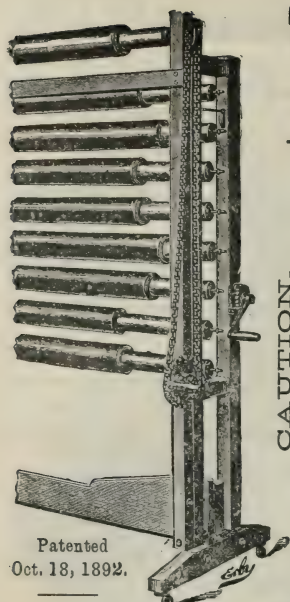
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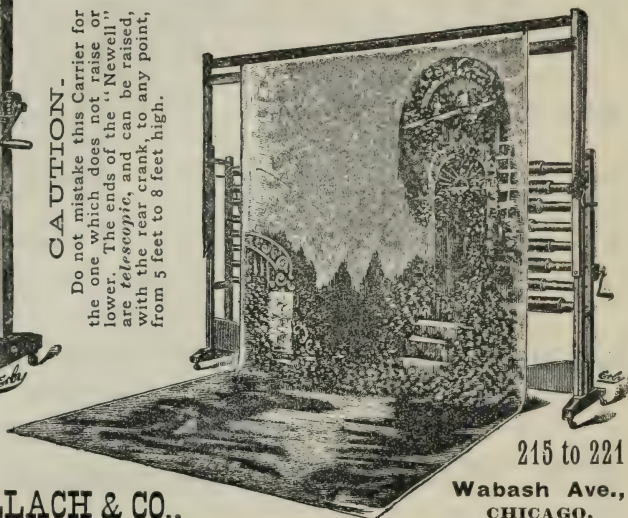
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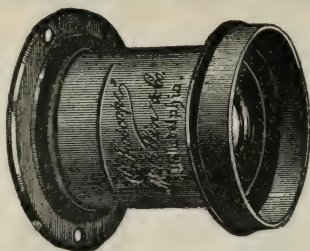
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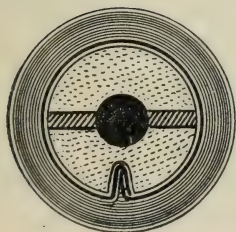
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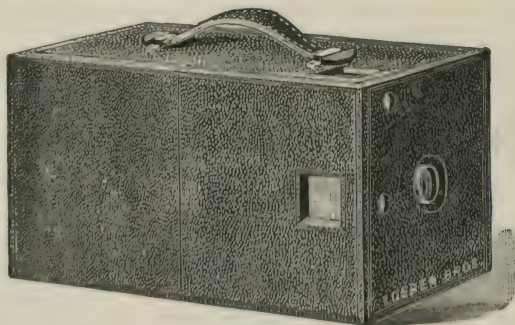
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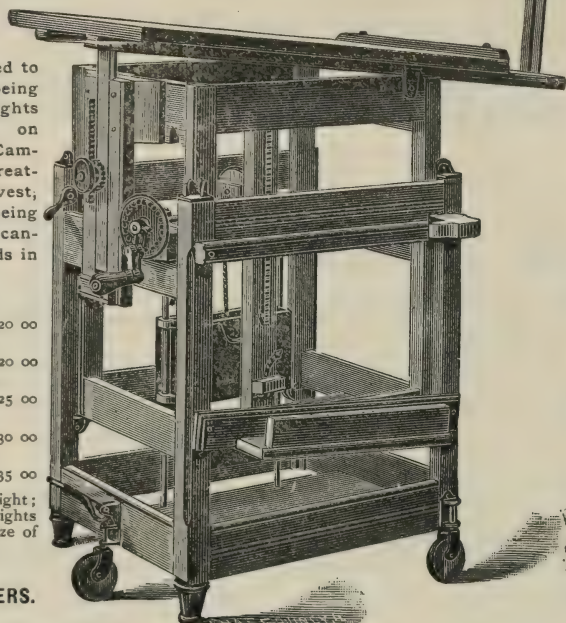
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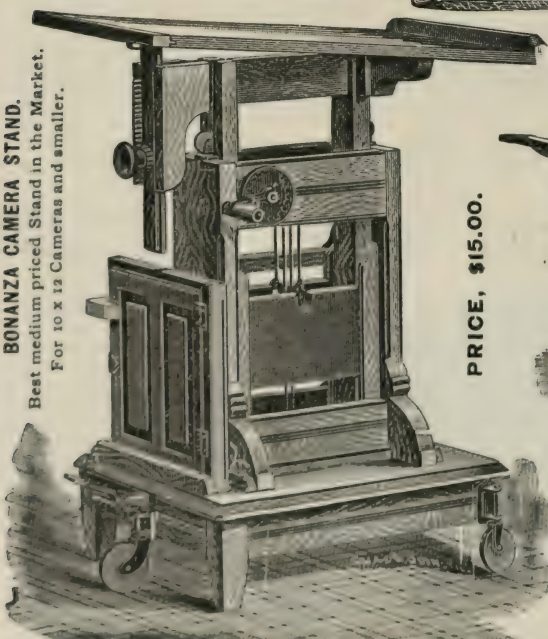
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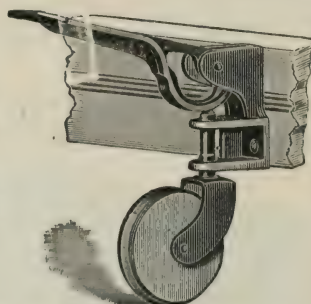
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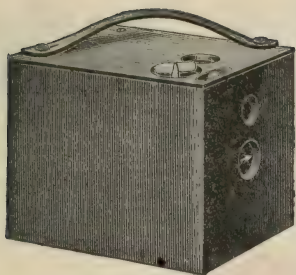
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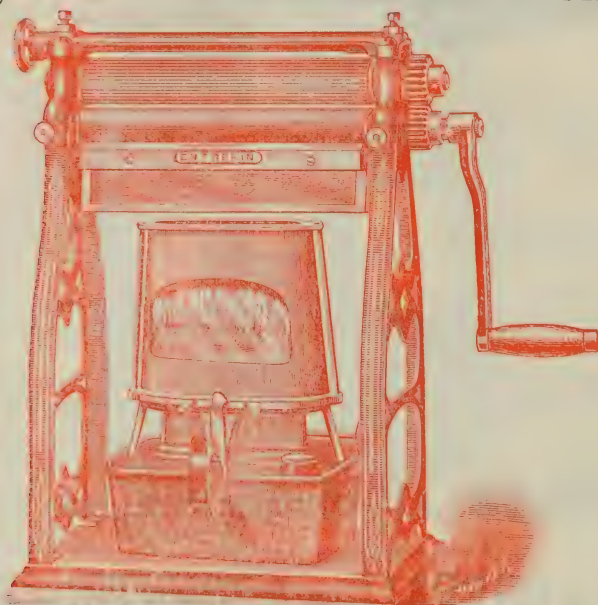
204 and 206 Chester St.,

BUFFALO, N. Y.

Entrekin's Double Roll Burnishers

ARE UNEQUALED.

May be Used with Either Gas or Oil.



PATENT IMPROVED ROTARY BURNISHER.
With Turn Back Roll and Swing Fire-Pan.

These Burnishers are especially adapted to burnishing prints made on the
AMERICAN "ARISTO" PAPER.

YOUR SUPPLY HOUSE WILL SEND YOU DESCRIPTIVE PAMPHLET.

The Cheapest and Best Machines now in the Market.

PRICES:

THE ACCURATE BURNISHER.

For cut, see next issue.

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| 8-Inch Roll, | - | - | - | \$15 00 | 15-Inch Roll, | - | - | - | \$30 00 |
| 10 " " " | - | - | - | 25 00 | 20 " " " | - | - | - | 40 00 |
| 25-Inch Roll, | - | - | - | | | | | | \$50 00 |

THE PATENT IMPROVED ROTARY BURNISHER,

| | | |
|------------------------|-------------------------------|-------------------------------|
| 8-Inch Roll, \$15.00. | 10-Inch Roll, light, \$17.50. | 10-Inch Roll, heavy, \$25.00. |
| 15-Inch Roll, \$35.00. | 20-Inch Roll, \$45.00. | 25-Inch Roll, \$55.00. |

E. & H. T. ANTHONY & CO.,
SOLE AGENTS,

591 BROADWAY, NEW YORK.



OFFICE OF
D. H. BURNHAM, CHIEF OF CONSTRUCTION,
WORLD'S COLUMBIAN EXPOSITION,
1143 THE ROOKERY,
CHICAGO.

May 9. 1892
M. A. Seed Dry Plate Co.
St Louis Mo.

Gentlemen

My last order for plates arrived very promptly. Please accept thanks for being so prompt.

I wish to state, that I am using your plates exclusively for all work done on these grounds for the official record of construction

Of course comment by me as to the good qualities of the Seed plate are entirely unnecessary

Very sincerely
C. D. Arnold
Official Photographer

WUESTNER'S

NEW



Orthochromatic Plates

Are the first in rank and proclaimed by the highest authority
and our best amateurs as a plate

The **EQUAL** of which has as yet **NOT** been before our Profession.

The results obtained by some of our professional and amateur friends are simply wonderful.

WUESTNER'S REGULARS are unsurpassed.

The First Prizes at our latest Conventions—Boston, Washington and Buffalo—were carried off by Photographers using our Plates.

Ever since the Plates have been on the market they have held their reputation as being the leaders.

FOR SALE BY ALL DEALERS.

WUESTNER'S NEW EAGLE DRY PLATE WORKS

22, 24 & 26 JACKSON PLACE, JERSEY CITY, N. J.

ONE OUNCE
PYROGALLIC ACID
 RESUBLIMED

From **E. SCHERING,**

MANUFACTURING CHEMIST, BERLIN, GERMANY.



THE GENUINE
 BEARS THESE
 COLORED LABELS



REGISTERED.

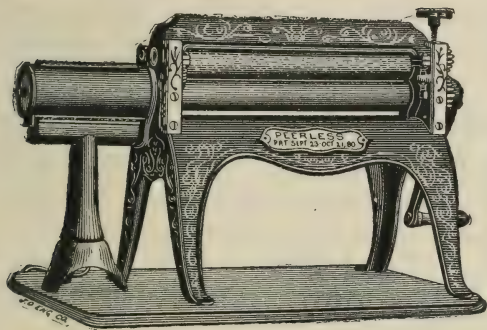
SCHERING'S "PYRO."
 FAC-SIMILE
 AND SEALS.

SEE THAT YOU GET THE "GENUINE SCHERING'S."

For sale to the trade by

E. & H. T. ANTHONY & CO., 591 Broadway, New York.

NEW "PEERLESS" BURNISHERS.



OLEUM BURNISHER.

THESE Machines are the latest inventions of our Mr. W. H. BOLES, the inventor of the well-known Acme Burnisher.

For Aristo Paper, our Machines cannot be equaled.

Don't buy until you have examined the merits of the "Peerless."

Ask your dealer for it.

Send for Illustrated and Descriptive Circular and Price List.

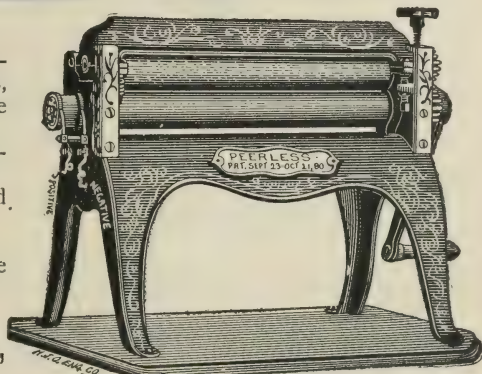
THE "PEERLESS" BURNISHER CO.,
 SYRACUSE, N. Y., U. S. A.

OLEUM AND ELECTRIC.
 ROTARY AND STATIONARY.

Heated by OIL, GAS or ELECTRICITY.

Twenty-five Points of Superiority!

QUICKEST AND MOST UNIFORM
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ELECTRIC BURNISHER.

America's Standard Photographic Journal.

1864 — 1893.

BEGINNING WITH JANUARY, 1893,

WILSON'S PHOTOGRAPHIC MAGAZINE,

enlarged to forty-eight pages, in an entirely new
form and dress, will be published

MONTHLY,

full from cover to cover of interesting and valuable instruction for the practical photographer and amateur worker; new contributors, new departments, and many original and novel features. The January issue

WILL BE

SUPERBLY ILLUSTRATED

with a fine photogravure of Mme. Modjeska from one of Napoleon Sarony's best pictures, with a portrait of Sarony, and a dozen other pictures. During the year the best work of the most famous photographers of America and Europe will be presented, and no effort or expense spared to make the Magazine the best of its class in the world. Reports of new processes and methods, matters of progress, together with papers upon practical subjects by bright writers will be given in every issue. No one can afford to miss Wilson's Photographic Magazine for 1893. The subscription price is reduced to

THREE DOLLARS PER YEAR,

SINGLE NUMBER 30 CENTS.

If you have not seen a copy of the Magazine, send for a **trial subscription blank, three months for fifty cents**, open to new subscribers only.

EDWARD L. WILSON,

PUBLISHER OF PHOTOGRAPHIC BOOKS,

853 BROADWAY,

NEW YORK.

What Does it Signify?

HAVING seen a circular issued to promote the sale of a particular *brand* of Albumen Paper, in which occurs the singular misstatement that any other *water-mark* than B. F. K., Rives, "signifies nothing," we have thought it worth while to state exactly what the water-mark N. P. A. does signify.

Being desirous of getting up a quality of paper which could *be depended upon* as being as nearly uniform, and as excellent as in the nature of things could be obtained, we asked the President of the National Photographic Association what we should call it. He replied call it N. P. A. We wrote to B. F. K., at Rives, to make us their first quality of paper with this water-mark in quantities of a thousand reams. The interpretation they put upon the letters was "New Paper Anthony." They agreed to do so. We instructed them that if by any mistake such a lot of paper proved in any respect *inferior they must cut it up and sell it for writing paper*, but in no case to send it to our albumenizers. We selected the albumenizing company that had the reputation of being the best in Europe, and instructed them that if any N. P. A. paper should by any accident come to them that should appear to be anywise *inferior, they should not albumenize it*, but send it back to B. F. K. to be cut up for writing paper, otherwise we should hold them responsible for damages. When the paper and albumenizers were thus secured all right, they were to cull out any that had been spotted in the albumenizing to be sold for second quality at less price.

The water-mark N. P. A. therefore "*signifies*" all of the above facts, and being a *water-mark*, and *not a mere brand*, it cannot be counterfeited because it can only be put in when the paper is made, and the *brand* that is on the *same paper* is registered, so that to copy it renders the offender liable to heavy damages.

EXTRA BRILLIANT
N.P.A.
DRESDEN.

Brands alone signify nothing, for we know of several instances where parties keep on hand an assortment of stamps to put on paper that comes to them unstamped, so that a customer can be accommodated in a few minutes with paper that is "branded while he waits."

B. F. K. never like to let any paper go out with *their* water-mark unless it is a good article. If it will merely "pass muster" they cut off the edge that has *their* water-mark in, and sell this paper at a less price to some albumenizers who send it to dealers in this country and elsewhere who put on it such brands as please them.

The *brand* therefore *signifies nothing* on whatever paper it may be stamped, *and whether registered or not.*

The only thing that *does signify anything* is the water-mark N. P. A.

The testimonials to the excellence of this paper given by the most eminent photographers have been given not merely after *trial*, but after *continuous use.*

E. & H. T. ANTHONY & CO.,

591 BROADWAY, NEW YORK.

PUBLISHED EVERY WEEK.

TENTH YEAR.

❧ THE ❧ EYE ❧

DEVOTED TO

Photography and Kindred Sciences.

THE EYE is entirely different from any other journal published. It aims to give photographers the news of the day. It is published in the interest of the fraternity. The most thoroughly independent Photo Journal in America. One of the best mediums for Advertisers in the United States. Chicago being the Columbian World's Fair City, the eyes of the whole world are attracted to it. **THE EYE** will give all information concerning the World's Fair.

From four to five thousand people look over the **Want and For Sale** ads. in **THE EYE** every week, consequently it is one of the best mediums for the sale of galleries, or those wanting positions.

Four lines for fifty cents for two insertions; twenty-five cents for subsequent insertions.

If you want to be posted on what is going on in photography and among photographers of the world, you must read **THE EYE**.

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| One Year, | - | - | - | - | - | \$2 50 |
| Six Months, | - | - | - | - | - | 1 25 |
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Club rates with **Anthony's Bulletin**, **The Photographic Times**, **The American Journal of Photography**, or any other Journal or Magazine of any kind published.

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THE EYE,

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The only Sensitized Paper
to use, is

Aristotype Paper

because it gives ANY desired tone and is remarkably easy to work.

The SHADOWS are TRANSPARENT, the WHITES are PURE, the HALF-TONES PERFECT, and prints are lasting.

There is no curling or sticking, and the treatment is same as for Albumen paper.

NEGATIVES should be such as are used for Albumen Prints, and NOTHING SPECIAL IS REQUIRED.

Being a gelatine paper, the surface does not rub, as does collodion.

It is the most perfect Aristotype paper known.

If you are not using it, try it and be convinced. All dealers keep it.

BRADFISCH & PIERCE,

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Solio Paper

Is a **superior substitute** for albumen paper, and is free from the defects common to gelatine and collodion papers. It gives **clear whites, exquisite tones** and **high gloss**, and does not stain the negatives.

Solio will not curl, crack or blister; requires no special handling, and can be **used** with **ordinary negatives**. It does not fix out.



Eastman's . . .

Bromide Paper.

NOTICE:

Nothing but the *best Imported Paper* is used as a support in the manufacture of our **Permanent Bromide** and **Eureka** papers. Some manufacturers of cheap Bromide Paper use inferior American paper. Inferior paper makes inferior pictures, and is difficult to work in crayon. **Eastman's** Permanent Bromide Paper is absolutely reliable.

Eastman Kodak Co.,

13 First
Prize Medals.

Rochester, N. Y.

Vol. 23.

DECEMBER 24, 1892.

No. 24.

ANTHONY'S PHOTOGRAPHIC BULLETIN.



EDITED BY

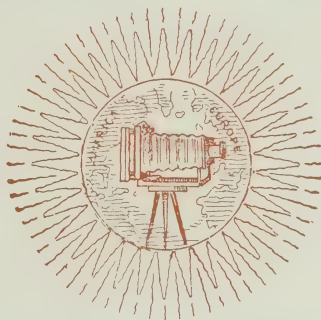
PROF. CHAS. F. CHANDLER, PH. D., LL. D.

PROF. OF APPLIED CHEMISTRY IN THE SCHOOL OF MINES
COLUMBIA COLLEGE N. Y. CITY

AND

PROF. ARTHUR H. ELLIOTT, PH. D., F. C. S.

PROF. OF CHEMISTRY AND PHYSICS
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ALL CLIMAX PORTRAIT CAMERAS

ARE FITTED WITH

"Benster" Holder and Carriage Movement on our Patent
Rollers and Lever Focusing Attachment.

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| Double swing back, - - | \$39 00 | No. 15 B. 17 x 20 and under, | \$83 00 |
| The same for 10 x 12 and | | " 16 B. 18 x 22 | " 90 00 |
| under, double swing back, | 55 00 | " 17 B. 20 x 24 | " 97 00 |
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All the above are supplied with a lever attachment, by which the most minute adjustment of the focus may be instantly obtained.

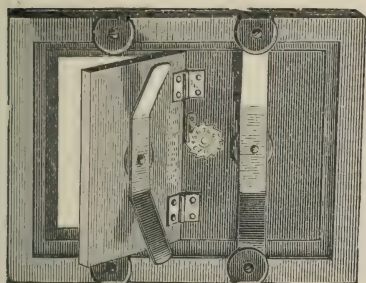


BENSTER HOLDER WITH CURTAIN SLIDE.

Before purchasing a camera, ask to see the above. If your dealer does not have them, **WE HAVE.**

E. & H. T. ANTHONY & CO.,
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ANTHONY'S PATENT IMPROVED PRINTING FRAMES.



Our printing frames have been greatly improved by the placing of a washer under the spring, thereby saving the wear and tear of the wood-work, and the springs are fastened with rivets instead of screws. We have also recently added a spring tally for recording the number of prints made. (See cut.)

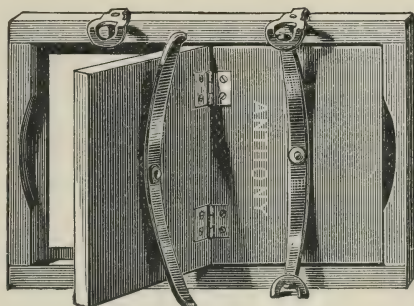
| Size. | Flat. | Deep. | Size. | Flat. | Deep |
|---------------|--------|--------|---------------|--------|--------|
| 3½ x 4½ | \$0 36 | ... | 11 x 14 | \$1 80 | \$2 40 |
| 4 x 5 | 38 | .... | 14 x 17 | 2 40 | 3 00 |
| 4½ x 5½ | 40 | .... | 16 x 20 | 3 00 | 4 20 |
| 4½ x 6½ | 42 | .... | 17 x 20 | 3 00 | 4 50 |
| 5 x 7 | 50 | .... | 18 x 22 | 4 00 | 5 00 |
| 5 x 8 | 52 | .... | 20 x 24 | 5 00 | 5 25 |
| 6½ x 8½ | 60 | \$1 20 | 24 x 30 | | 8 80 |
| 8 x 10 | 75 | 1 40 | 35 x 45 | | 15 00 |
| 10 x 12 | 1 00 | 1 60 | 30 x 60 | | 20 00 |

When the backs open lengthwise, 10 per cent. additional is charged.

FAIRY PRINTING FRAMES.

Patented December 8, 1885.

Combining strength, rigidity and lightness, and so constructed that the springs lock into the eyes or catches on the sides, rendering it impossible for them to slip from position. They are handsomely finished, and much lighter and more compact than any other style. Prices as follows:



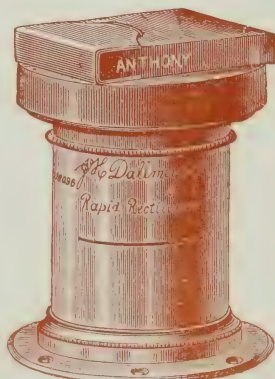
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|--------------------|--------|------------------|--------|
| 3½ x 4½, each..... | \$0 45 | 5 x 7, each..... | \$0 60 |
| 4 x 5, " | 45 | 5 x 8, " | 60 |
| 4½ x 5½, " | 45 | 6½ x 8½, " | 65 |
| 4½ x 6½, " | 55 | 8 x 10, " | 75 |

No larger sizes made.

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THE DALLMEYER LENSES.



NONE OTHERS APPROACH THEM.

In the QUALITY OF GLASS USED;
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ADJUSTMENT; in SOFTNESS, CRISP-
NESS and DEPTH; in RAPIDITY, DELI-
CACY and EVERY QUALITY a LENS
SHOULD POSSESS, the DALLMEYER
LENSES are UNRIVALED.

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